Phase 3 interim report

May 1983 **Summary**

OWMC
Ontario
Waste Management
Corporation

Chairman's report

This is a summary of OWMC's progress in the third phase of our Facilities Development Process. While the goal of Phase 3 is to select specific candidate site(s) for liquid industrial and hazardous waste treatment and disposal facilities in Ontario, we are announcing the results of two recent decisions in an interim report issued this week. First, a revised five-step search and selection plan for finding a site or sites is outlined, that will result in additional detailed information being collected and analyzed before candidate sites will be selected. Second, candidate areas have now been selected in the Golden Horseshoe, where OWMC will concentrate its search for suitable sites.

Since the start of Phase 3 in January 1983, we have met with provincial groups representing several different organizations, held a series of regional meetings in central locations throughout the Golden Horseshoe area, and conducted a weekend seminar in Niagara-on-the-Lake. In total, OWMC has met with 113 groups over this period.

The most noteworthy result of these discussions has been a number of changes made in the search and selection process. These new details are outlined on page 6 of this summary.

The resulting expanded search and selection process has led us to the selection of candidate areas within the Golden Horseshoe, which are outlined in this summary. These areas have been defined using more detailed recorded information on hydrogeological, transportation, land use, and other environmental factors. The suitability of each area for either an incinerator, physical/chemical treatment plant and/or engineered landfill has also been assessed.

Over the next several months, these areas will be studied in greater detail, using the factors outlined in the search process. To obtain and verify this information, discussions will be held with local community groups, businesses and government officials. Liaison groups will be established, seminars and workshops scheduled, and presentations made to local organizations.

We expect the entire Phase 3 program to conclude in the Fall, with the announcement of specific candidate sites, and a final Phase 3 report will be issued. Phase 4 will then proceed, with a comparison of the sites involving detailed on-the-land studies.

Finally, we also have important new information on waste reduction and recycling opportunities in Ontario. A Waste Reduction Opportunities Study has looked at three major industrial sectors in Ontario, examined their special wastes and made several recommendations on how OWMC could assist industries in their waste reduction and recycling efforts. We presently are studying these suggestions and will be seeking your comments on them over the next few months.

Finding a solution to the special waste problem becomes more critical as time passes. We are committed to building safe and effective facilities as soon as possible. To do so we need your help. Study our recommendations and let us have your questions, ideas or comments.

Sincerely,

D.A. Chant, Chairman and President

OWMC Chairman & President, Dr D.A. Chant

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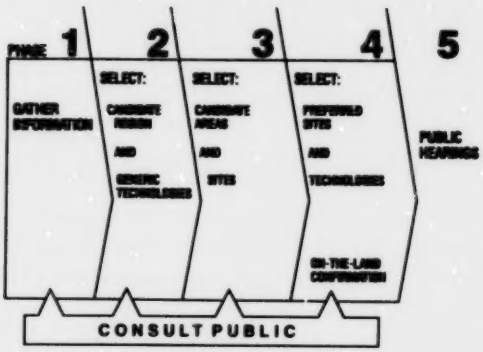
Background

The Ontario Waste Management Corporation (OWMC) is a provincial crown agency created in 1981 by the Ontario government to establish a liquid industrial waste and hazardous waste management system for the province. One of the first tasks of the Corporation was to examine the possibility of constructing a treatment and disposal facility at South Cayuga in the Regional Municipality of Haldimand-Norfolk. Preliminary hydrogeological studies of the site revealed that it had several short-comings and the Board of Directors of OWMC voted unanimously to reject the site in November 1981.

Figure 1
Facilities development process



Following the rejection of the South Cayuga site, OWMC conducted a series of meetings with the public in early 1982, and began developing a broad corporate plan. Several major issues were identified:

- The need to design and build a waste treatment and disposal system to manage safely liquid industrial waste and hazardous waste not presently receiving adequate treatment and disposal in Ontario.
- The need to assist Ontario industries in identifying additional, practical ways to reduce and/or recycle liquid industrial waste and hazardous waste.
- The need to consult with the public on the nature and scope of the industrial waste problem and how it can be remedied.

Before a treatment and disposal facility is built, detailed proposals must be presented to an independent Hearing Panel appointed by the Ontario Government, and public hearings will be held.

A five phase Facilities Development Plan (FDP) was designed to prepare these proposals (see Figure 1). Phase 1, completed in September 1982, defined the nature and size of the special waste problem. The term "special waste" was adopted at that time to describe industrial wastes which require special treatment not available in sewage treatment plants and/or municipal incinerators and which should not be disposed of in municipal landfills. At the same time, Phase 1 preliminary studies reported on possible treatment technologies, the hydrogeological conditions throughout Southern Ontario and the key engineering, planning and environmental issues that should be considered in later phases. A Phase 1 Report was issued on September 9, 1982.

Phase 2 narrowed the search for sites for treatment and disposal facilities to the Golden Horseshoe region and outlined key planning guidelines to be used in selecting the type, size and location of facilities required. A Phase 2 Report was issued on January 13, 1983.

The specific objective of Phase 3, which will be completed in the Fall, is to select candidate sites which may be suitable for one or more of the facility components outlined in Phase 2 (incineration, physical/chemical treatment, engineered landfill).

Phase 2 narrowed the search for sites for treatment and disposal facilities to the Golden Horseshoe region and outlined key planning guidelines to be used in selecting the type, size and location of facilities required.

Public consultation

The following is a summary of the major issues and concerns expressed to date during the Phase 3 consultation program and the impact they have had on OWMC planning.

Search and Selection Process

One of the most important planning issues facing OWMC in Phase 3, and the issue which has been most affected by the consultation program, is the search and selection process. A search process was proposed and outlined in the Phase 2 Report, the views expressed on the search and selection process in OWMC's meetings with the public are summarized:

- The proposed selection process was endorsed in principle by most participants. There was strong support for maintaining environmental and human health factors as the most important criteria in the selection of candidate areas and sites.
- Many participants from the Niagara Peninsula in particular said that the Peninsula should be exempted from the search process. They felt that most areas in the Peninsula are remote from areas of greatest waste generation, and consist of prime agricultural land, particularly soft-fruit lands. These participants suggested that hydrogeological zones in the Golden Horseshoe, but not in the Niagara Peninsula, should be given the highest priority. Some suggested that the Corporation look outside the Golden Horseshoe, for example in remote areas of Northern Ontario.
- Concern was expressed repeatedly that no explicit mention was made of socio-economic factors in the proposed process, and of the role they would play in the selection of sites.
- OWMC was also urged by many groups to broaden its consideration of land use beyond the specific factors listed in the Phase 2 Report, i.e., industrially designated land and publicly held land. In addition, careful consideration should be given to local land use policies and future land use plans.

As a result, several important changes have been made in the search and selection process (see Revised Search Process chart page 8).

There was strong support for maintaining environmental and human health factors as the most important criteria in the selection of candidate areas and sites.

Waste Management

Where in the Golden Horseshoe should facilities be located?

The search and selection process outlined in this report describes the environmental, transportation, land use and agricultural factors which will be used to identify specific sites. While total haulage distance and travel time on various standards of roads will be considered in the identification of sites, the primary environmental requirements for each component of the system will be the most important consideration.

What impact will OWMC have on the hazardous waste management problem? Will OWMC treat wastes from outside the province to increase efficiency and revenue?

OWMC is continuing with a detailed examination of the quantities and composition of waste streams, with the objective of estimating those wastes most likely to come to OWMC facilities. Future trends in waste reduction, recycling and reuse technologies are also being considered.

OWMC was also urged by many groups to broaden its consideration of land use beyond the specific factors listed in the Phase 2 Report, i.e., industrially designated land and publicly held land.

What will be the effectiveness of proposed safety measures, emergency responses, and emission control and monitoring standards?

OWMC will be developing detailed proposals in consultation with the site communities on emission controls, monitoring procedures, staff training programs and

emergency response procedures, which will be included in OWMC's proposal to the Hearing Panel.

What role will local authorities and citizens play in the monitoring and operation of these facilities?
OWMC will continue meeting members of the public to discuss the Corporation's activities as they progress. Community liaison programs will be developed, some form of liaison group between the Corporation and communities will be established, and proposed emission standards will be published and discussed.

Meetings will continue with a broad range of industry representatives to refine waste quantities estimates prior to making decisions on facility size.

Design and Marketing of OWMC Facilities

How large will OWMC's facilities be?
There was general agreement with the guidelines on sizing outlined in the Phase 2 Report – namely, that OWMC facilities should be designed on the basis of a start-up capacity, capable of expansion if necessary, to avoid the possibility of wasteful over-design.

What prices will be charged and what impact will they have on privately-operated waste management facilities?
A marketing manager has joined the staff to develop marketing policies. These policies will reflect the Corporation's position that it will not unnecessarily duplicate adequate treatment services now offered by the private sector. Meetings will continue with a broad range of industry representatives to refine waste quantities estimates prior to making decisions on facility size.

The Corporation repeatedly was asked what guarantees it could give that future regulations would ensure the proper treatment of special wastes.

A concern frequently raised in Phase 2 is the role future Ministry of the Environment regulations will play in determining the wastes that require special treatment and ensuring that they receive such treatment. The Corporation repeatedly was asked what guarantees it could give that future regulations would ensure the proper treatment of special wastes.

The Corporation is meeting with Ministry of the Environment officials to discuss waste quantity estimates in particular. In addition, OWMC recently made a submission to the Minister on the forthcoming Blueprint for Waste Management, and will continue to discuss the issue of regulations with MOE and others after the MOE Blueprint proposals are released in June.

Transportation of Wastes

Will OWMC subsidize the costs of transporting wastes to OWMC facilities? This would facilitate regulation and data collection and eliminate the temptation towards illegal dumping.
Industry representatives continue to recommend that OWMC charge true, unsubsidized charges for waste treatment and transport and at present this is our intention. As much as 60% of liquid industrial hazardous waste can be water and OWMC is investigating the possibilities of establishing dewatering facilities with the local transfer stations. Transfer stations would also bulk the various waste streams, thereby reducing the high costs of transporting small volumes of waste.

Consultation Opportunities

How will the general public be involved in the day-to-day operations of the OWMC facility? For example, will the public have any influence on the setting of emission standards?
The Corporation is committed to public consultation, but the actual details of how the public will be involved in setting and monitoring emissions standards have not yet been worked out. The creation of a citizens' liaison group is a distinct possiblity.

Treatment and disposal facilities

Will OWMC's present policy of broad public consultation continue, and as issues under discussion become more technical, will there be funding available to participants?

Yes, the Corporation will continue to consult the public throughout each stage of the Facilities Development Process, right through to the monitoring of facility operations. The Corporation will fund Hearing participants, but the decisions on allocation will be made by the independent Hearing Panel. The Panel will decide what types of activities will be funded and which groups or individuals will be eligible to receive financial assistance.

Conclusion

The Phase 3 public consultation program has resulted in a number of specific changes to the Facilities Development Plan and the search and selection process in particular. Additional land use, socioeconomic and environmental factors have been included in the revised process; a number of steps have been taken to begin addressing the design and marketing issues raised by the public, particularly the need to clarify OWMC's relationship with privately-operated waste management companies, and to refine the estimates OWMC has received on waste volumes. Finally, the questions asked on the design and operation of OWMC facilities will be addressed over the coming months in information programs now being developed.

At present, OWMC has identified five possible combinations of treatment and disposal components:

- a fully integrated facility, with an engineered landfill, a physical/chemical treatment plant and an incinerator all located at the same site
- dispersed facilities, with the engineered landfill, the physical/chemical treatment plant and the incinerator each located at a separate site
- partially dispersed facilities with an incinerator at one site and the engineered landfill and the physical/chemical treatment plant at another site
- partially dispersed facilities with an engineered landfill at one site and the physical/chemical treatment plant and the incinerator at another site
- partially dispersed facilities with an engineered landfill at one site and the physical/chemical treatment plant and the incinerator at another site

Regardless of the basic system selected, local transfer stations are expected to be located in various parts of the province. Specific areas for these transfer stations have not yet been identified.

To obtain the most desirable combination of candidate sites and system alternatives OWMC proposes to take the following steps:

- identification of candidate areas for each facility component separately
- comparison and ranking of candidate sites within the areas in terms of their suitability for individual components
- selection from the candidate sites of the preferred sites for each combination of facilities
- comparison of the five possible combinations using data based on the actual sites to select the final preferred combination and sites(s).

OWMC proposes to compare the five possible combinations using data based on the actual sites to select the final preferred combination and site(s).

The search and selection process

In Phase 2, OWMC outlined five basic steps necessary to search for and select appropriate sites for its facilities (see page 2). This procedure is based on a set of complex planning factors which were and are changing continuously as new information is obtained.

Generally, the process is viewed as sensible, and the major steps remain unchanged. Within each step, however, some important modifications have occurred.

One of the most important consultation activities which has occurred in Phase 3 is public feedback on the five step procedure. Generally, the process is viewed as sensible, and the major steps remain unchanged. Within each step, however, some important modifications have occurred.

The following is a summary of the revised process, beginning with Step 2 – the selection of candidate areas within the Golden Horseshoe.

Step 2 – Selecting Candidate Areas within the Golden Horseshoe for each Component

The identification of candidate areas for the incinerator, the physical/chemical treatment plant and the engineered landfill is to be done using two categories of factors:

1. Environmental factors:

– *air dispersion* – the incinerator must be located in an area that will ensure optimal dispersion of scrubbed gases from the incinerator stack. In spite of using the most advanced cleansing technologies, the possibility of some contaminants in the emissions must be recognized.

– *hydrogeology* – the incinerator, the physical/chemical treatment plant and the engineered landfill must be located in hydrogeological areas that contain predictable, natural and uniform geological and hydrogeological conditions that are conductive to containment.

– *surface waters* – both the physical/chemical treatment plant and the incinerator produce effluents that must be properly discharged. The choice between discharging these effluents through a treatment plant or directly into a receiving body of water following treatment on the OWMC site will be resolved when candidate sites have been identified. At that time more details will be available on the nature of the effluents and the characteristics and capacity of available sewage treatment facilities. At the present stage of analysis, however, it is appropriate to examine the *ability of surface water bodies within the Golden Horseshoe* to receive these treated effluents. This represents a significant change from the original proposal in the Phase 2 report, where it was suggested that the ability of existing sewage plants to treat these effluents would be a major screening factor.

– *transportation.* Consistent with the principle of reducing environmental risk, steps should be taken at each stage of the process to reduce further the possibility of an accidental release of special waste. Two transportation factors were identified which are appropriate at the candidate area stage to assess the transportation risk factor – total haulage distance, and travel time on various types and standards of roads.

2. Land Use Factors:

Although the identification of candidate areas in Step 2 should occur primarily on the basis of the environmental factors outlined above, two important additional questions must be asked:

– By provisionally dropping portions of the candidate region from further immediate consideration, are areas offering significant or unique advantages being lost?

– Once the candidate areas have been identified, will the remaining range of siting choices they contain be too narrow and restricted?

The approach OWMC has adopted to this difficult problem is to introduce an additional group of land use factors:

- *Agriculture:* Regional agricultural information was used to determine if the search process was being restricted only to highly productive land.
- *Industrially designated and publicly held land:* Industrial and publicly held lands were examined to determine if significant opportunities for siting facility components on such lands were being lost or retained.
- *Built-up areas and population density:* Major built-up areas were delineated, as the facility components would not be sited within such areas; however, further consideration will be given to industrially designated vacant lands within built-up areas. Population densities were also determined.

One final note. A system of checks and balances is used for these new Step 2 factors. This means that when consideration is given to eliminating an area, because of the transportation factor for example, consideration must also be given to other general characteristics of the area: hydrogeological conditions, air dispersion, surface water, agricultural characteristics, population densities and the possible presence of public land assemblies and industrial lands. Areas are excluded only if they fail to meet basic environmental criteria or they have a low likelihood of suitability relative to the areas retained. In each case the reasoning for excluding areas at this time is provided. The areas rejected at this stage remain subject to reconsideration if suitable sites are not identified in the subsequent analysis of the candidate areas selected.

Step 3 – Identifying Candidate Sites within Candidate Areas

Step 3 has undergone the most significant changes from the original proposal in the Phase 2 Report, as the result of two influences – public comment and a more detailed internal review of the factors to be used at this stage. In both cases, the message was clear. "Do not compromise environmental safety. Also, assess local land use policies in your search for industrially designated and publicly held land. Include a broader range of land use and socioeconomic factors when evaluating these lands."

Once the candidate areas have been identified the search process for sites will be divided into two parallel streams of activities. First, the industrially designated and publicly held lands will be reviewed in greater detail using such considerations as existing, committed and planned uses, parcel size and configuration. All sites feasible for one or more of the facility components within these areas will be identified.

Second, a range of physical, biological, land use, transportation and socioeconomic considerations will be identified and mapped within the remaining private non-industrial lands. Initially the focus will be on identifying features such as environmentally sensitive areas, highly specialized crop lands, and areas committed for residential development which clearly are not suitable for the facility components. Once these unacceptable areas have been dropped from consideration the focus will shift to the identification of lands which seem relatively more suited to the type of facilities envisioned. During this stage it is expected that the following factors will be used to identify and delineate potential sites.

Physical and Biological Environment

- Physical and biological constraints, e.g., flood-prone lands
- Geologic landform constraints

Areas are excluded only if they fail to meet basic environmental criteria or they have a low likelihood of suitability relative to the areas retained.

REVISED SEA

NARROWING

STEP

1 IDENTIFYING CANDIDATE REGION

EVALUATION FACTORS

TRANSPORTATION
- Haulage distance

HYDROGEOLOGY
- Zones 1 and 2

2 IDENTIFYING CANDIDATE AREAS

EVALUATION FACTORS

ENVIRONMENTAL PROTECTION
- Hydrogeology
- Air dispersion
- Surface water
- Transportation

LAND USE OVERVIEW
- Agriculture
- Built up areas
- Population density
- Industrially designated publicly held lands

3 IDENTIFYING CANDIDATE SITES

EVALUATION FACTORS
- Physical and biological environment
- Transportation
- Land use and ownership
- Socio-economic
- Technical/Financial

4 EVALUATING CANDIDATE SITES

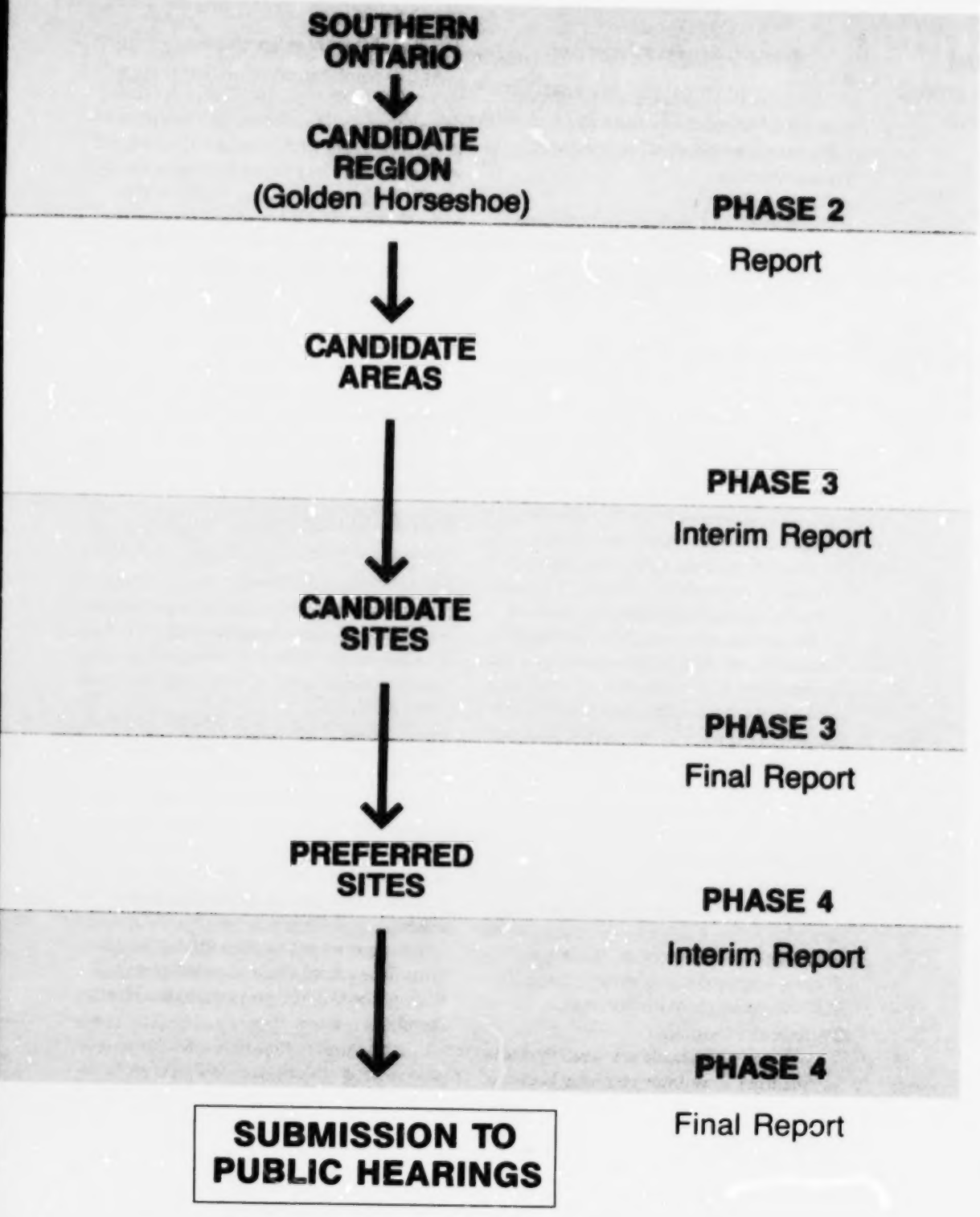
EVALUATION FACTORS
- More detailed examination of factors listed in #3

5 EVALUATING SELECTED SITES

EVALUATION FACTORS
- On-the-land investigations

RCH PROCESS

THE SEARCH



Search and selection process (continued)

There will be a lengthy list of potential sites scattered across the candidate areas, and it is anticipated that many of these sites eventually will be found to be relatively unsuitable.

- Air quality and meteorological constraints
- Surface water constraints, e.g., effluent dispersion/assimilative capacities
- Environmentally significant areas

Transportation

- Haulage distance
- Availability and distance from freeways
- Availability and distance from provincial highways (other than freeways)
- Availability and distance from regional roads

Land Use and Land Ownership

- Industrially designated and publicly held lands
- Agricultural land capability
- Agricultural land uses, e.g., specialty crops
- Capability for other resources, e.g., forestry, sand and gravel extraction
- Other resource uses
- Federal and Provincial planning, e.g., Niagara Escarpment Planning Area
- Native communities
- Major incompatible uses, e.g., airports
- Comparable uses, e.g., other landfills
- Existing, planned and proposed land uses, e.g., residential
- Land ownership patterns

Socioeconomic

- Population density and distribution
- Population characteristics
- Recreational and tourist resources and amenities
- Archaeological sites
- Historical and cultural sites and features
- General community character and lifestyle
- Regional economic characteristics
- Land economics, e.g., agriculture
- Local government institutions

Technical/Financial

- Proximity to suitable sewerage systems
- Proximity to suitable receiving bodies of water
- Major utilities, e.g., pipelines and transmission lines
- Parcel size and configuration

At this point it is expected that there will be a lengthy list of potential sites scattered across the candidate areas, and it is anticipated that many of these sites eventually will be found to be relatively unsuitable. A small number of screening criteria will be formulated at this point to assist in reducing the number of potential sites. These criteria will include such concerns as basic land use conflicts, potentially severe environmental impacts, potentially severe social and economic impacts, and unfavourable regional or local access conditions.

The list of factors presented is subject to further review, alteration and confirmation in the future, after more site-specific information and further comment from the public are available.

Step 4 – Comparing Candidate Sites and Selecting Preferred Sites for Detailed Testing

Step 4 will consist of a detailed comparative evaluation of a smaller number of sites. The detailed comparative evaluation will involve further consideration of the factors outlined under Step 3.

Step 5 – Detailed Testing of Preferred Sites

The Corporation will select the top ranked sites for detailed field investigations. These investigations will include detailed hydrogeological, water and air dispersion, and natural environmental modelling and testing.

The product of this step will be the selection of the actual site(s) that will form the basis of the OWMC proposal to the Hearing Panel.

The selection of candidate areas

The identification of candidate areas utilized two categories of factors:
– factors which concern either the receiving environment, providing for a second level of protection, or the reduction of risk. The factors which fall into this category are hydrogeology, atmospheric dispersion, surface waters and transportation.
– factors which concern the need to maintain a range of choices at the site identification stage. The factors which fall into this category are agriculture, industrially designated and publicly held lands, built-up areas and population density.

Resources must be used effectively and efficiently to conduct a systematic, search and selection process which focuses available resources on critical concerns and provides definite conclusions in a timely manner.

Essentially, the process of selecting candidate areas involved using a series of overlay maps, utilizing the environmental and land use considerations outlined in the Search Process article. Having identified the basic Step 2 considerations that bear on the siting of the three facility components, the process of applying these considerations followed these key steps:
– The exclusion of areas which failed to meet the Step 2 environmental requirements for the three facility components.
– The identification of candidate areas relatively more suitable for each facility component.

Areas Excluded

The lower priority areas which have been excluded for all facility components within the Golden Horseshoe are outlined on Map 1, and the major reasons for the exclusion of these areas are summarized in Table 1. The following is an outline of those key reasons:

A Areas – In the A Areas outlined on Map 1, there is a low likelihood of finding a suitable site for any of the components. There is considerable variability in geologic materials and subsurface conditions in these areas and/or they mostly contain less than 10 metres of silt clay soils. These shortcomings would not provide the natural containment considered necessary to ensure a second level of environmental protection.

Part of the A Area – marked A-1 on the map – was initially identified as having the lowest priority because of its complex and variable soil conditions. The chances of finding the necessary soil conditions in Area A-1 are considered low because of the known widespread occurrence of buried sand at several levels. The balance of the region was then studied in more detail. The remaining A Areas were identified from this more detailed analysis.

In reviewing the characteristics of the candidate areas, it was evident that the exclusion of Area A-1 would mean that only small parcels of publicly held and industrially designated land will remain for the subsequent analysis. OWMC has decided to proceed with a further level of hydrogeological investigations for Area A-1 to maximize the opportunities for identifying candidate sites on non-agricultural land.

B Areas – B Areas are areas where air dispersion is a significant constraint. This is a particular concern for the incinerator, although it is also a consideration for the physical/chemical treatment plant and the engineered landfill, as outlined previously.

TYPES OF AREAS EXCLUDED	HYDROGEOLOGICAL CONDITIONS	ATMOSPHERIC DISPERSION			TRANSPORTATION CONSIDERATIONS		SPECIALTY AGRICULTURE	MAJOR BUILT-UP AREAS	OTHER CONSIDERATIONS
		LAKE BREEZE	TOPOGRAPHIC FEATURES	URBAN HEAT ISLANDS	PROXIMITY TO 400 SERIES HIGHWAYS	REGIONAL ACCESS			
A	●								
B		●	●	●			●	○	No unique advantage
C	○				●	○			No unique advantage No industrially designated or publicly held land
D				○				●	

Table 1
Reasons for exclusion

● **Primary**
○ **Secondary**

The two B Areas to the east and the west of St. Catharines are subject to the combined effects of all three air dispersion constraints – lake breeze, topography and urban heat island. These areas are also constrained by a heavy concentration of specialty agriculture and high rural and urban population densities. In view of these constraints, and the presence of more suitable areas in the same general vicinity, it was decided to exclude these two areas.

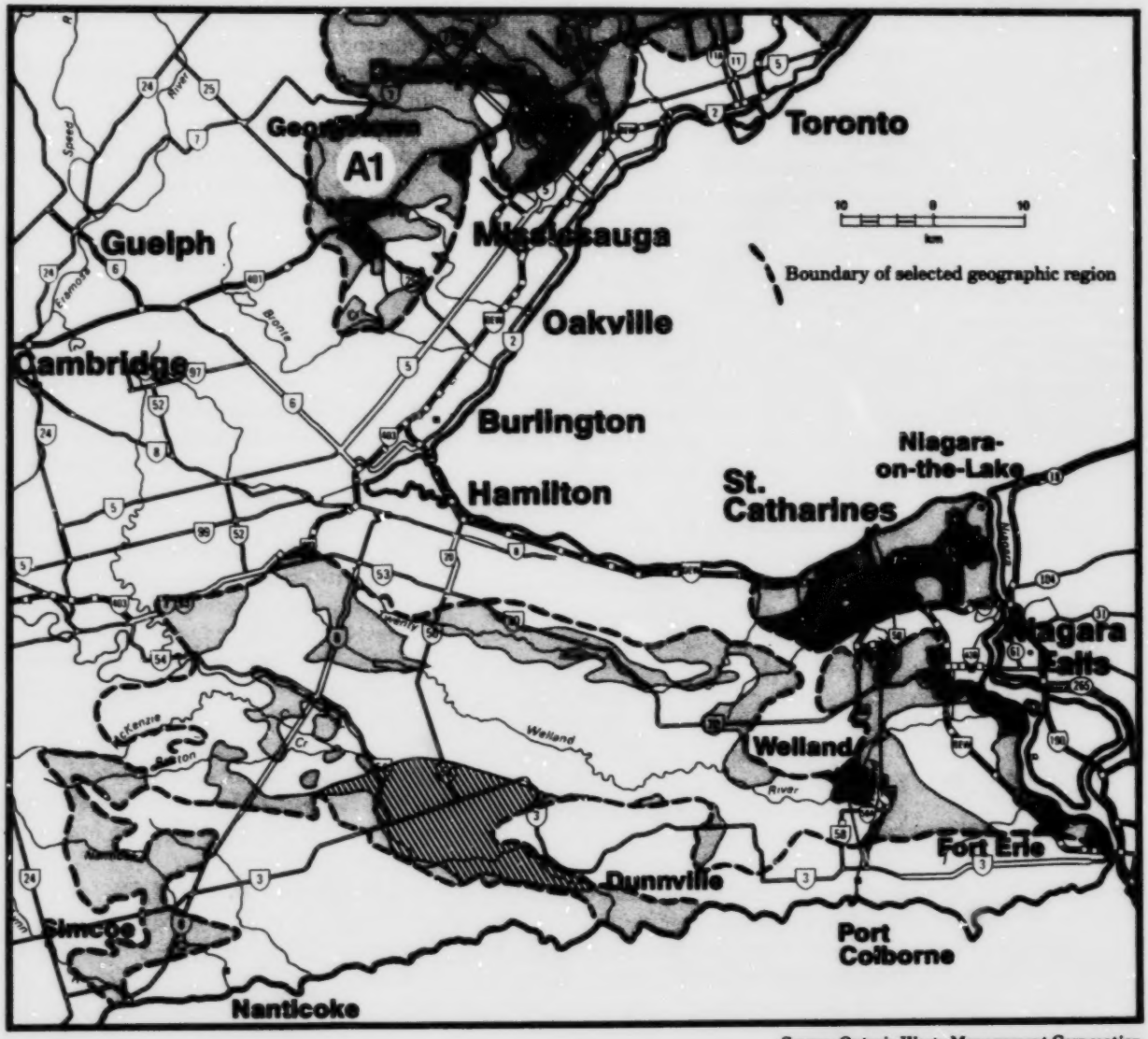
The other areas within the B Area are three narrow ribbons of land along the Niagara River subject to lake breeze effects. It was decided that these areas could be excluded as they are small and have no offsetting benefits relative to much larger candidate areas in the same vicinity.

C Area – The C Area is the area beyond the 30 minute travel time contour from the 400-series highways. Proximity to the 400-series highways is considered advantageous as such highways have lower accident rates than local roads and other provincial highways. In the event of a spill or accident 400-series highways do not generally have development as close to the edge of the road.

In examining the area beyond the 30 minute travel time contour and comparing it to the candidate areas, it was evident that the C Area has no offsetting advantages as compared with the larger and more accessible candidate areas in terms of: industrially designated or publicly held lands; geological/hydrogeological conditions; surface water; agricultural productivity or capability; or population density.

D Areas – The D Areas are those areas which are completely built up, based on recent aerial photography. Although the opportunities for establishing facility components within built-up areas are extremely small, consideration will be given to industrially designated vacant lands within built-up areas. It is anticipated that, at best, such areas might only be suitable for the establishment of a physical/chemical treatment plant.

Map 1.
Areas excluded for any facility component



Source: Ontario Waste Management Corporation

Legend

Primary excluding factors

- Hydrogeological conditions (A Areas)
- Specialty agriculture and atmospheric dispersion (B Areas)
- Atmospheric dispersion (B Areas)
- Transportation considerations (More than 30 minutes from 400 series highways) (C Area)
- Major built up areas (D Areas)

Areas Included

The candidate areas that remain after the above exclusions are outlined on Map 2. Some of the candidate areas are potentially suitable for all facility components and others are potentially suitable for only one or two components. The major difference between the areas suitable for all components and the other candidate areas is the additional depth of soils required for an engineered landfill.

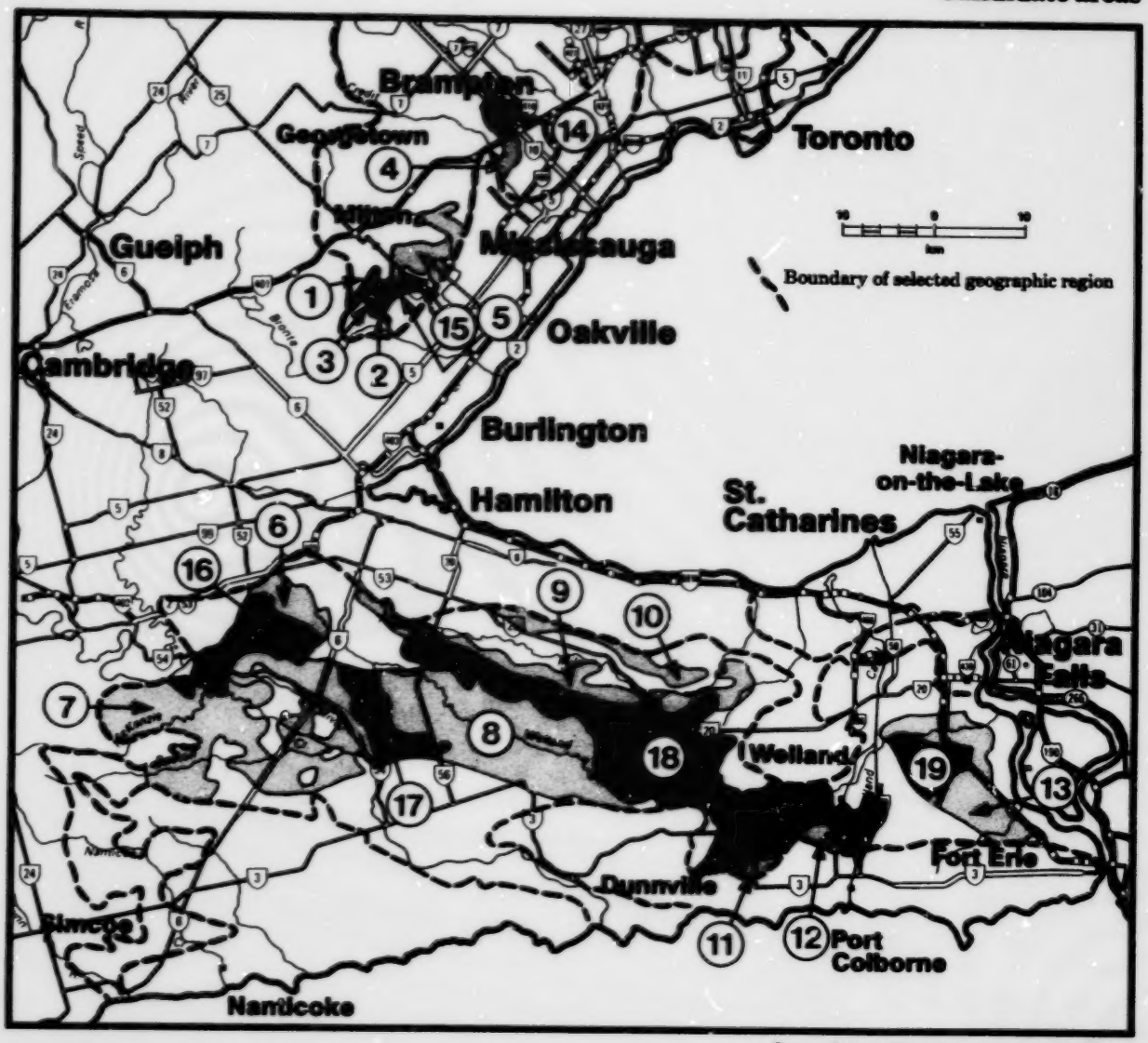
The major difference between the areas suitable for all components and the other candidate areas is the additional depth of soils required for an engineered landfill.

The presence of a single air dispersion constraint was also used as a basis for excluding areas for the incinerator. A single air dispersion constraint was not considered a sufficient reason to exclude an area for an engineered landfill or a physical/chemical treatment plant if that area had offsetting desirable characteristics.

When the candidate areas are compared, a number of general patterns are evident:

- A large proportion of the candidate areas are potentially suitable for two or three facility components. Thus, considerable potential remains for fully or partially integrated facilities.
- There are large candidate areas which potentially are geologically/hydrogeologically suitable for an engineered landfill. An even larger proportion of the candidate areas is potentially geologically/hydrogeologically suitable for a physical/chemical treatment plant.
- A relatively small area north of Lake Ontario is potentially suitable for the facility components.
- Air dispersion considerations affect a small share of the candidate areas at this stage but are likely to represent constraints for more of the candidate areas when local information is analyzed.
- A considerable range of choice remains among the candidate areas concerning receiving bodies of water into which treated effluent might be discharged.
- There is a substantial variation among the candidate areas in travel time to the centroid and to the 400-series highways.
- A high proportion of the candidate areas are in Class 1 and 2 agricultural capability and some of the candidate areas have Classes 3 and 4 land. The prevalance of Class 1 and 2 mirrors the general pattern exhibited throughout the Golden Horseshoe.
- The amount of specialty agriculture in the candidate areas is quite limited. It should be possible at the site identification stage to avoid the displacement of such uses.
- The candidate areas vary greatly in their proximity to urban centres as well as in their rural population densities.
- There is not much industrially designated and publicly held land in the candidate areas although there appears to be some potential for establishing sites in the vicinity of industrially designated areas. This limited range of choice led to a decision to undertake a further level of geological/hydrogeological analysis in Area A-1.

Map 2.
Candidate areas



Source: Ontario Waste Management Corporation

Legend

Components included

■	1-2	Physical/chemical only	▒	4-13	Physical/chemical and incinerator
■	3	Landfill and physical/chemical	■	14-19	All components

Waste reduction opportunities

OWMC will be investigating ways in which it can assist industries in their efforts to reduce and recycle special wastes. As a basis for this work, the Corporation commissioned Proctor and Redfern Limited, the Ontario Research Foundation and Roy F. Weston Inc. in September 1982 to undertake a Waste Reduction Opportunities Study. This is a brief summary of the results of that study; a full report of the study is available from OWMC.

OWMC

Ontario Waste Management Corporation

As a provincial crown agency, OWMC's mandate is to implement a province-wide program for the management of liquid industrial waste and hazardous wastes. This program will include building and managing facilities for the treatment and disposal of wastes and developing programs to assist in the reduction and recycling of these wastes.

For more information

If you would like to receive further information on OWMC's Facilities Development Process or any other aspect of the Corporations activities please contact:

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M4W 3E2

Or telephone using this toll free number:
1 800 268-1179
(In Toronto call 923-2918)

Study approach

Three representative industry sectors were chosen for study, the primary metals industry, the chemical manufacturing industry and the fabricated metal parts industry. These were selected based on the results of an earlier study which estimated that these three industry sectors are the generators of the largest quantities of industrial waste in Ontario, between them accounting for approximately 70 percent.

Conclusions

The major conclusions drawn from this study are as follows:

1. that the three Ontario industry sectors surveyed already are making significant efforts in waste abatement, reduction, reuse and recycling.
2. to assess the impact that such waste reduction efforts will have on the quantity and nature of the wastes which will require
   - in-house technical expertise on the best approaches available;
   - larger waste streams making economic recovery, reuse or recycling more feasible;
   - a greater economic penalty because of the much larger waste volumes if treatment and disposal are chosen over reduction and recovery.
3. that the major reason for companies adopting waste abatement reduction, reuse and recycling is the cost of proper treatment and disposal prices.
4. that the trends expected in waste quantities remaining for treatment and disposal will be downward over the next few years.
5. that a well-established recycling industry exists in Ontario, particularly for:
   - solvents
   - waste oils
   - oily water
   - steel pickling liquors
6. that some smaller to medium-sized companies having waste problems would welcome some assistance from an organization such as OWMC to help establish procedures to abate, reduce and/or reuse or recycle those wastes.
7. that there are fourteen specific potential roles for OWMC to consider to help industry realize reduction opportunities.
8. that the awareness of OWMC's existence and purpose is quite low amongst the companies surveyed.

OWMC is presently studying these recommendations, and will be seeking public reaction to them over the coming months. In the meantime, steps will be taken to recruit appropriate staff to begin addressing these issues.

OWMC

ONTARIO WASTE MANAGEMENT CORPORATION
FACILITIES DEVELOPMENT PROCESS

PHASE 3 INTERIM REPORT

Selection of Candidate Areas

May 1983

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Introduction

PURPOSE OF THIS REPORT

This is an interim report which summarizes the results of the Ontario Waste Management Corporation's work during Phase 3 of the Facilities Development Process. The ultimate purpose of this phase is to select specific candidate site(s) for liquid industrial waste treatment and disposal facilities in Ontario. It is not the purpose of this interim report, however, to announce these specific candidate sites. This cannot be done until the end of Phase 3 - expected this Fall - when more specific assessments have been made of the size and extent of facilities required, and more detailed site information has been collected and analyzed. At that time, a final Phase 3 Report will be issued.

Two important planning decisions will guide the remainder of the Phase 3 work. First, revisions have been made to the search and selection methodology which was outlined in the Phase 2 Report (January, 1983) - in particular, additional information will be collected and analyzed prior to the selection of candidate sites (Chapter 3). Second, candidate areas have been selected within which the search for these sites will now be concentrated (Chapter 4).

BACKGROUND INFORMATION

The Ontario Waste Management Corporation (OWMC) is a provincial crown agency created in 1981 by the Ontario government to establish a liquid industrial waste and hazardous waste management system for the province. One of the first tasks of the Corporation was to examine the possibility of constructing a treatment and disposal facility at South Cayuga in the Regional Municipality of Haldimand-Norfolk. Preliminary hydrogeological studies of the site revealed that it had several shortcomings and the Board of Directors of OWMC voted unanimously to reject the site in November 1981.

Following the rejection of the South Cayuga site, OWMC conducted a series of meetings with the public in early 1982, and began developing a broad corporate plan. Several major issues were identified:

- The need to design and build a waste treatment and disposal system to manage safely liquid industrial waste and hazardous waste not presently receiving adequate treatment and disposal in Ontario.

- The need to assist Ontario industries in identifying additional, practical ways to reduce and/or recycle liquid industrial waste and hazardous waste.

- The need to consult with the public on the nature and scope of the industrial waste problem and how it can be remedied.

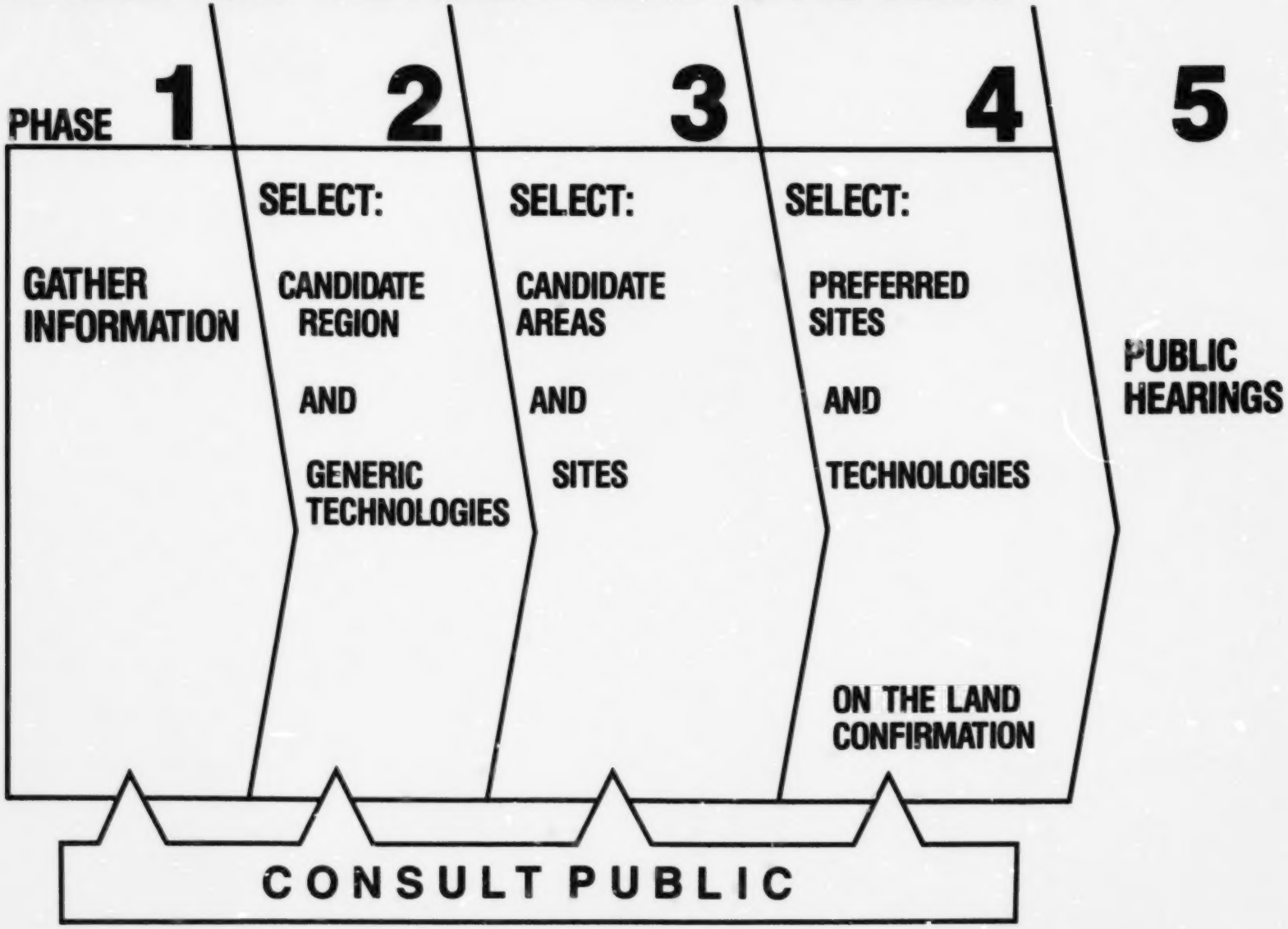
Before a treatment and disposal facility is built, detailed proposals must be presented to an independent Hearing Panel appointed by the Ontario Government, and public hearings will be held.

A five phase Facilities Development Plan (FDP) was designed to prepare these proposals (see Figure 1). Phase 1, completed in September 1982, defined the nature and size of the special waste problem. The term "special waste" was adopted at that time to describe industrial wastes which require special treatment not available in sewage treatment plants and/or municipal incinerators and which should not be disposed of in municipal landfills. At the same time, Phase 1 preliminary studies reported on possible treatment technologies, the hydrogeological conditions throughout Southern Ontario and the key engineering, planning and environmental issues that should be considered in later phases. A Phase 1 Report was issued on September 9, 1982.

Phase 2 narrowed the search for sites for treatment and disposal facilities to the Golden Horseshoe region and outlined key planning guidelines to be used in selecting the type, size and location of facilities required. A Phase 2 Report was issued on January 13, 1983.

Figure 1

FACILITIES DEVELOPMENT PROCESS



The specific objective of Phase 3, which will be completed in the Fall, is to select candidate sites which may be suitable for one or more of the facility components outlined in Phase 2 (incineration, physical/chemical treatment, engineered landfill).

WHAT THIS REPORT COVERS

This report covers the following specific topics:

- The Phase 3 public consultation program - the key issues raised and the advice received, in particular, on the proposed search and selection methodology.
- The revised search and selection methodology.
- The selection of candidate areas within the Golden Horseshoe.
- The planning and public consultation program to be conducted during the remainder of Phase 3.

Also included in response to considerable public interest is a summary of the results of a Waste Opportunities Study commissioned by OWMC.

The Phase 3 Public Consultation Program

INTRODUCTION

The public consultation program has been an essential part of the Facilities Development Plan. At the end of each major step in the plan, a summary report is issued, which outlines the key decisions that have been taken, the views and comments of the public and the issues that must be addressed in the next phase of the plan, in consultation with the public. In this way, OWMC can seek advice on future planning issues on a timely basis, and the public can be informed of the changes that have been made as a result of the consultation program.

This chapter summarizes the major views and concerns OWMC has received from the public following the January 1983 release of the Phase 2 Report, and the effect they have had on Phase 3 planning. The most frequently discussed issues are outlined under subject headings, and the questions that were repeatedly raised are listed in Appendix F. A more detailed report of the Phase 3 consultation program is being prepared, and it will include transcripts and/or summaries of the discussions held. It will be placed on deposit in municipal and regional libraries, where a similar Phase 2 consultation report is now deposited.

BACKGROUND

The Phase 3 public consultation program leading to this interim report covered the period from the January 13, 1983 release of the Phase 2 Facilities Development Report to the present. During this period, there were four distinct public consultation efforts: (1) a continuation of meetings with four provincial groups, each representing a number of organizations; (2) a series of regional meetings in central locations throughout the Golden Horseshoe area; (3) a weekend seminar held in Niagara-on-the-Lake; and (4) additional meetings to accommodate groups and individuals who could not meet with OWMC in one of the regional

public meetings. (See Appendix B for meeting details.) In total, OWMC staff has met with over 113 different groups and individuals since January, 1983.

- The meetings with provincial groups continued a practice which OWMC has followed since the beginning of the consultation program. These groups represent agricultural, municipal, environmental and industrial interests: the Environment Committee of the Ontario Federation of Agriculture; the Planning, Energy and Environment Committee of the Association of Municipalities of Ontario; a group of environmental and community associations who meet together on a regular basis; and representatives from Ontario industrial and transportation associations.

- Regional meetings were scheduled in Toronto, Brampton, Hamilton, Oshawa, Richmond Hill and St. Catharines. The dates and places of these meetings were announced in 40 regional and daily newspapers, in radio advertisements run twice a day over two weeks in the Golden Horseshoe, in 1500 posters distributed to OWMC's mailing list, in OWMC's Exchange newsletter and in the Phase 2 Report. Individuals and groups wishing to meet with OWMC officials were invited to call a toll-free number to make an appointment at one of the locations. The discussions were open to the public except when groups or individuals themselves requested a closed meeting. A total of 51 individuals and groups met with OWMC at these meetings.

- A weekend seminar was held at the Niagara Institute in Niagara-on-the-Lake, to discuss the search and selection methodology in particular. Twenty-five representatives from environmental, industrial, religious, educational, agricultural and municipal groups and associations were invited to attend, and to examine in detail the OWMC search and selection process as outlined in the Phase 2 report. (See Appendix D for list of participants.)

- OWMC also met with various groups and individuals who were unable to attend one of the scheduled meetings described above. (Appendix B lists these meetings.)

MAJOR ISSUES

The following is a summary of the major issues and concerns expressed to date during the Phase 3 consultation program and the impact they have had on OWMC planning.

A number of trends should be noted. First, although a wide cross-section of participants was involved in the public meetings and discussions in earlier phases, most participants in the Phase 3 program came from the Golden Horseshoe. Second, most participation - with the exception of the weekend seminar held in February - has taken the form of questions to Corporation officials. Finally, these questions have consistently reflected the following concerns: the search and selection process; the treatment (physical/chemical and incineration) and disposal (landfill) processes, and their possible impacts on the environment and human health; the size - in terms of waste volumes and types and land required - of these facilities; and the relationship of OWMC to the Ministry of the Environment and privately-operated waste management facilities in the province.

1. Search and Selection Process

One of the most important planning issues facing OWMC in Phase 3, and the issue which has been most affected by the consultation program, is the search and selection process. A search process was proposed and outlined in the Phase 2 Report, and this was the subject of close examination at the weekend seminar at Niagara-on-the-Lake in particular. For this reason, a brief summary of the views expressed at that seminar is included in this section. Before turning to the seminar comments and recommendations, however, the views expressed on the search and selection process in OWMC's other meetings with the public are summarized.

- The proposed selection process was endorsed in principle by most participants. There was strong support for maintaining environmental and human health factors as the most important criteria in the selection of candidate areas and sites.

- Many participants from the Niagara Peninsula in particular said that the Peninsula should be exempted from the search process. They felt that most areas in the Peninsula are remote from areas of greatest waste generation, and consist of prime agricultural land, particularly soft-fruit lands. These participants suggested that hydrogeological zones in the Golden Horseshoe, but not in the Niagara Peninsula, should be given the highest priority. Some suggested that the Corporation look outside the Golden Horseshoe, for example in remote areas of Northern Ontario.

- Concern was expressed repeatedly that no explicit mention was made of socioeconomic factors in the proposed process, and of the role they would play in the selection of sites.

- OWMC was also urged by many groups to broaden its consideration of land use beyond the specific factors listed in the Phase 2 Report, i.e., industrially designated land and publicly held land. In addition, careful consideration should be given to local land use policies and future land use plans.

As a result, several important changes have been made in the search and selection process, and these are outlined in more detail in the next chapter. These changes include the addition of land use, local planning and socioeconomic factors in the selection of candidate sites, and the examination of key transportation and land use factors - in addition to the environmental factors originally proposed - prior to the selection of candidate areas. The search for these areas, however, continues to be in the hydrogeological zones in the Golden Horseshoe where suitable subsurface soil conditions are thought to exist, even if this means that some agricultural land ultimately must be used. OWMC's responsibility is to

select a suitable site or sites, whether or not they turn out to be on agricultural land.

Niagara-on-the-Lake Seminar

The weekend seminar held at Niagara-on-the-Lake made specific comments on the search and selection issue, and these are documented here, with an explanation of the impact they have had on the selection process. A more detailed report of this seminar is available from OWMC on request.

Participants in the seminar made the following key comments and recommendations on the search and selection process:

- Environmental factors should lead the process. Specifically, the prime environmental conditions for each facility component, particularly hydrogeological and atmospheric conditions, must be met. No site should be selected that would violate the primary environmental requirement for each component.

- The definition of land use should be expanded to include an evaluation of local and community plans. Simply searching for industrially designated or publicly held land, in the absence of other, broader considerations, would not be adequate.

- Socioeconomic impacts should be considered in advance of making specific site selections, rather than as part of the later process of testing the suitability of these sites.

- The cost of the facilities - in particular land costs - should play a secondary role to environmental factors. Areas or sites should not be ruled out solely on the basis of economics.

- No consensus was reached on the issue of centralized versus decentralized facilities. Some felt it would be socially and politically more acceptable if facilities were dispersed to several areas. Others

felt that a centralized facility would minimize risks through a reduction in the transport of waste materials between facilities, and would create more local economic and employment benefits.

As detailed in Chapter 3, a number of specific changes have been made to the search and selection process. A broader array of land use factors is now being used. Some explicit socioeconomic factors are also now included in the search and selection process. The Corporation cannot make a decision on the decentralized versus centralized issue until more planning and site specific information is available, but no component will be placed on a site that cannot satisfy the essential environmental requirements for that component.

2. Waste Management

A number of comments and views were expressed on the waste treatment and disposal technologies OWMC will use, and the immediate environmental, health and safety impacts they may cause. There were many questions, for example, on how and where toxic waste is generated, and on the composition of the waste streams. These questions reflected specific concerns: (1) where in the Golden Horseshoe should facilities be located; (2) what impact will OWMC have on the hazardous waste management problem; (3) will OWMC treat wastes from outside the province to increase efficiency and revenue; (4) what will be the effectiveness of proposed safety measures, emergency responses, and emission control and monitoring standards; and (5) what role will local authorities and citizens play in the monitoring and operation of these facilities?

On the first concern - where in the Golden Horseshoe should facilities be located - the search and selection process outlined in this report describes the environmental, transportation, land use and agricultural factors which will be used to identify specific sites. While total haulage distance and travel time on various standards of roads will be considered in the identification of sites, the primary environmental requirements for each component of the system will be the most important consideration.

To address the second and third concerns, OWMC is continuing with a detailed examination of the quantities and composition of waste streams, with the objective of estimating those wastes most likely to come to OWMC facilities. Future trends in waste reduction, recycling and reuse technologies are also being considered.

Regarding health and safety measures, OWMC will be developing detailed proposals in consultation with the site communities on emission controls, monitoring procedures, staff training programs and emergency response procedures, which will be included in OWMC's proposal to the Hearing Panel. To answer the last point, OWMC will continue meeting members of the public to discuss the Corporation's activities as they progress. Community liaison programs will be developed, some form of liaison group between the Corporation and communities will be established, and proposed emission standards will be published and discussed.

3. Design and Marketing of OWMC Facilities

A frequent and important area of discussion in the Phase 3 consultation program concerned the design and marketing of OWMC facilities - how large will they be, what prices will be charged and what impact will they have on privately-operated waste management facilities? There was general agreement with the guidelines on sizing outlined in the Phase 2 Report - namely, that OWMC facilities should be designed on the basis of a start-up capacity, capable of expansion if necessary, to avoid the possibility of wasteful over-design. Some participants expressed concerns, however, that OWMC would drive some private operations out of business, perhaps particularly in the recycling business. One participant suggested OWMC is empire-building, and attempting to take over all facets of liquid industrial waste management in Ontario.

A related concern frequently raised in Phase 2 is the role future Ministry of the Environment regulations will play in determining the wastes that require special treatment and ensuring that they receive such treatment. The Corporation repeatedly was asked what guarantees it could give that future regulations would ensure the proper treatment of special wastes.

The Corporation has taken a number of steps in recent months to address these concerns. A marketing manager has joined the staff to develop marketing policies. These policies will reflect the Corporation's position that it will not unnecessarily duplicate adequate treatment services now offered by the private sector. Meetings will continue with a broad range of industry representatives to refine its waste quantities estimates prior to making decisions on facility size. OWMC has recruited a Process Design Coordinator who will work with engineering consultants to ensure that appropriate treatment technologies are selected for its facilities.

The Corporation is meeting with Ministry of the Environment officials to discuss waste quantity estimates in particular. In addition, OWMC recently made a submission to the Minister on the forthcoming Blueprint for Waste Management announcement (see Appendix G), and will continue to discuss the issue of regulations with MOE and others after the MOE Blueprint proposals are released in June.

Additional Questions

Appendix F lists the most frequently asked questions on a variety of topics, and OWMC's responses.

Conclusion

The Phase 3 public consultation program has resulted in a number of specific changes to the Facilities Development Plan and the search and selection process in particular. Additional land use, socioeconomic and environmental factors have been included in the revised process; a number of steps have been taken to begin addressing the design and marketing issues raised by the public, particularly the need to clarify OWMC's relationship with privately-operated waste management companies, and to refine the estimates OWMC has received on waste volumes. Finally, the questions asked on the design and operation of OWMC facilities will be addressed over the coming months in information programs now being developed.

The Search and Selection Process

INTRODUCTION

This chapter describes the analysis and reasoning to be used in the search for and selection of appropriate sites for the three major facility components: the incinerator, the physical/chemical treatment plant and the engineered landfill. An overview is presented of the work accomplished to date, some general search and selection principles are outlined and the revised process is described.

BACKGROUND

The Phase 2 Report set out a five-step search process:

STEP 1: Narrow the search to a single geographic region in Ontario

STEP 2: Identify candidate areas suitable for each facility component within this geographic region

STEP 3: Identify candidate sites within candidate areas

STEP 4: Evaluate candidate sites and select preferred site(s)

STEP 5: Test and evaluate preferred site(s) in detail

The Phase 1 Report (September 1982) identified lands in Southern Ontario where the geological and hydrogeological conditions offer a higher probability of locating suitable sites for OWMC facilities. These lands were termed Zones 1 and 2, and OWMC determined that it would concentrate its search for sites in these zones.

The Phase 2 Report announced the results of Step 1 of the Search Process. Zones 1 and 2 within the geographic region of the Golden

Horseshoe area at the west end of Lake Ontario were selected for further consideration (See Figure 2). These zones were considered to have generally more suitable geological and hydrogeological conditions for the natural containment of special wastes. By focusing on areas with such conditions, a second level of protection, beyond that of engineering features designed in the facilities, would be built into the search and selection process.

The Phase 2 Report also identified five possible combinations of treatment and disposal components:

- a fully integrated facility, with an engineered landfill, a physical/chemical treatment plant and an incinerator all located at the same site

- dispersed facilities, with the engineered landfill, the physical/chemical treatment plant and the incinerator each located at a separate site

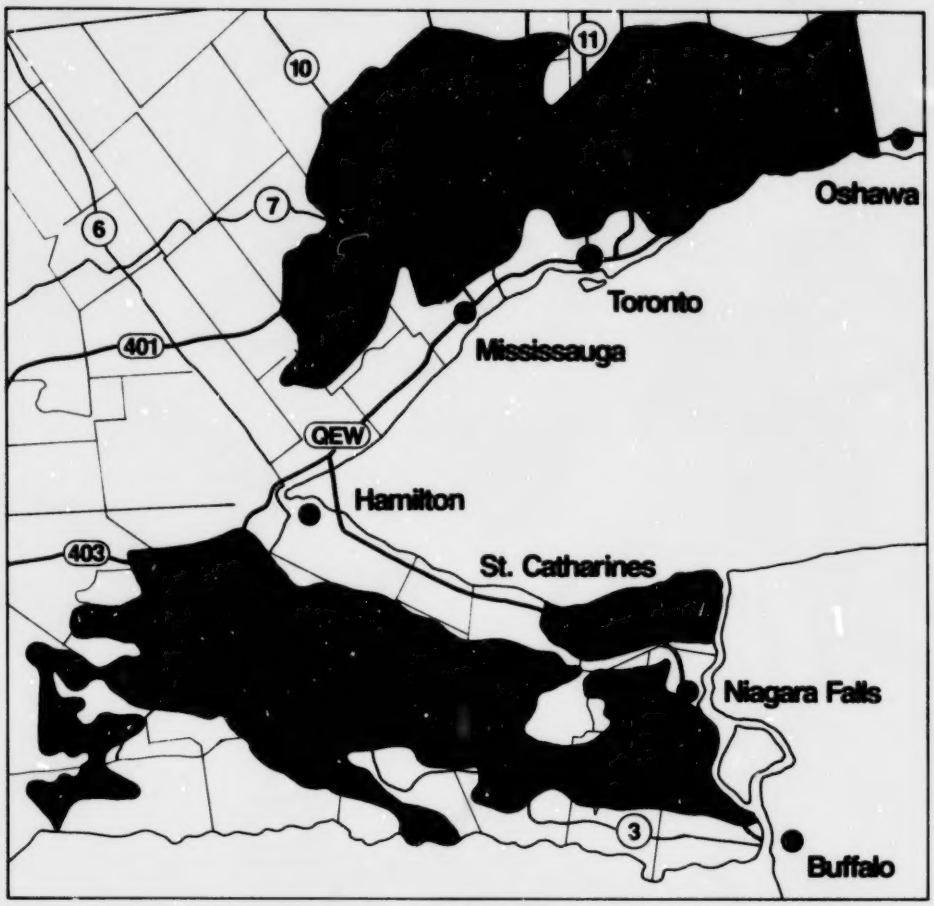
- partially dispersed facilities with an incinerator at one site and the engineered landfill and the physical/chemical treatment plant at another site

- partially dispersed facilities with an engineered landfill at one site and the physical/chemical treatment plant and the incinerator at another site

- partially dispersed facilities with a physical/chemical treatment plant at one site and the engineered landfill and the incinerator at another site.

Regardless of the basic system selected, local transfer stations are expected to be located in various parts of the province. Specific areas for these transfer stations have not yet been identified.

Figure 2



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SELECTED GEOGRAPHIC REGION - Golden Horseshoe

Legend

Zone 1

Subsurface conditions generally consist of silt and clay soils. These soils normally have lateral and vertical textural uniformity. As such, this terrain exhibits predictable geologic and hydrogeologic characteristics that will naturally restrict potential contaminant movement.

Zone 2

Subsurface conditions generally consist of a variety of geologic materials and/or variability within a single geologic unit. Variations in geologic and hydrogeologic characteristics exist but this terrain may locally provide natural containment of potential contaminants.

Note:	Only the shaded zones will be studied for candidate areas and site selection.

To obtain the most desirable combination of candidate sites and system alternatives OWMC proposes to take the following steps:

- identification of candidate areas for each facility component separately

- comparison and ranking of candidate sites within the areas in terms of their suitability for individual components

- selection from the candidate sites of the preferred sites for each combination of facilities

- comparison of the five possible combinations using data based on the actual sites to select the final preferred combination and sites(s).

GENERAL SEARCH AND SELECTION PROCESS PRINCIPLES

To make the search process as explicit as possible, OWMC has identified a number of general principles to guide and shape it:

- Progressive refinement of the search process: The process must evolve in a series of steps, which involve the evaluation of alternatives and the narrowing of geographic focus.

- Definition of the environment: The very broad and inclusive definition of the environment used in the Ontario Environmental Assessment Act (1975) has been adopted by OWMC.

- Protection of the environment: The primary consideration must be protecting the environment and human health.

- The involvement of those affected: Affected agencies, organizations and people must be consulted at key decision points in the process. OWMC is committed to a thorough consultation process.

- Efficiency and Effectiveness of the process: The costs and time involved in conducting a detailed analysis and evaluation of every conceivable site across the province are prohibitive. Resources must be used effectively and efficiently to conduct a systematic, search and selection process which focuses available resources on critical concerns and provides definite conclusions in a timely manner.

THE SEARCH AND SELECTION PROCESS

In Phase 2, OWMC outlined five basic steps necessary to search for and select appropriate sites for its facilities (see page 12). This procedure is based on a set of complex planning factors which were and are changing continuously as new information is obtained.

One of the most important consultation activities which has occurred in Phase 3 is public feedback on the five step procedure. Generally, the process is viewed as sensible, and the major steps remain unchanged. Within each step, however, some important modifications have occurred. The following is a summary of the revised process, beginning with Step 2 - the selection of candidate areas within the Golden Horseshoe. Chapter 4 of this report outlines this step in more detail and includes a description of the candidate areas selected.

Step 2 - Selecting Candidate Areas within the Golden Horseshoe for each Component

The identification of candidate areas for the incinerator, the physical/chemical treatment plant and the engineered landfill is to be done using two categories of factors:

1) Environmental factors:

- air dispersion - the incinerator must be located in an area that will ensure optimal dispersion of scrubbed gases from the incinerator

REVISED SEA

NARROWING

STEP

1

IDENTIFYING CANDIDATE REGION

EVALUATION FACTORS

TRANSPORTATION
- Haulage distance

HYDROGEOLOGY
- Zones 1 and 2

2

IDENTIFYING CANDIDATE AREAS

EVALUATION FACTORS

ENVIRONMENTAL PROTECTION
- Hydrogeology
- Air dispersion
- Surface water
- Transportation

LAND USE OVERVIEW
- Agriculture
- Built up areas
- Population density
- Industrially designated publicly held lands

3

IDENTIFYING CANDIDATE SITES

EVALUATION FACTORS
- Physical and biological environment
- Transportation
- Land use and ownership
- Socio-economic
- Technical/Financial

4

EVALUATING CANDIDATE SITES

EVALUATION FACTORS
- More detailed examination of factors listed in #3

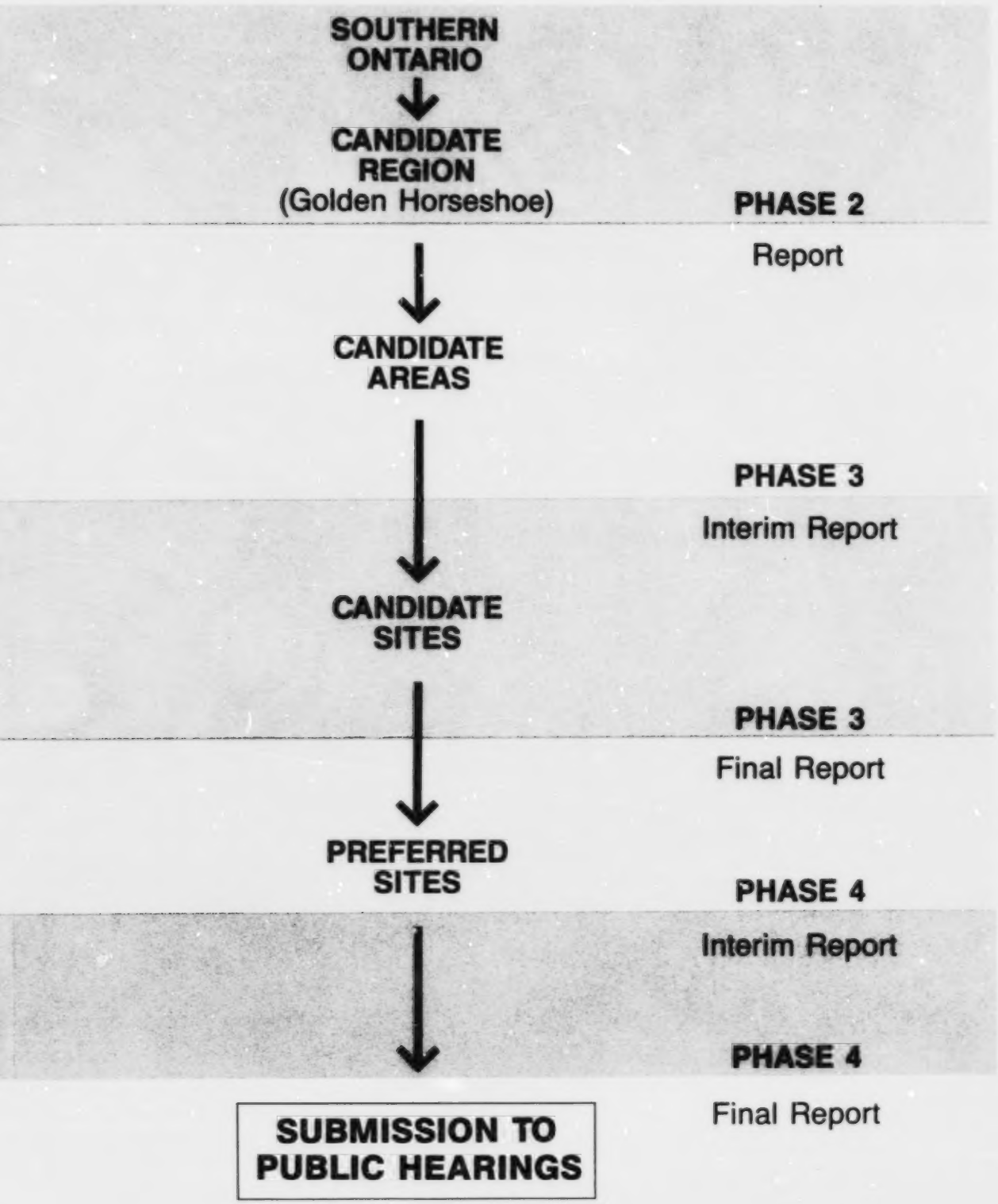
5

EVALUATING SELECTED SITES

EVALUATION FACTORS
- On-the-land investigations

RCH PROCESS

G THE SEARCH



stack. In spite of using the most advanced cleansing technologies, the possibility of some contaminants in the emissions must be recognized.

- hydrogeology - the incinerator, the physical/chemical treatment plant and the engineered landfill must be located in hydrogeological areas that contain predictable, natural and uniform geological and hydrogeological conditions that are conducive to containment.

- surface waters - both the physical/chemical treatment plant and the incinerator produce effluents that must be properly discharged. The choice between discharging these effluents through a treatment plant or directly into a receiving body of water following treatment on the OWMC site will be resolved when candidate sites have been identified. At that time more details will be available on the nature of the effluents and the characteristics and capacity of available sewage treatment facilities. At the present stage of analysis, however, it is appropriate to examine the ability of surface water bodies within the Golden Horseshoe to receive these treated effluents. This represents a significant change from the original proposal in the Phase 2 report, where it was suggested that the ability of existing sewage plants to treat these effluents would be a major screening factor.

- transportation: Consistent with the principle of reducing environmental risk, steps should be taken at each stage of the process to reduce further the possibility of an accidental release of special waste. Two transportation factors were identified which are appropriate at the candidate area stage to assess the transportation risk factor - total haulage distance, and travel time on various types and standards of roads.

2) Land Use Factors:

Although the identification of candidate areas in Step 2 should occur primarily on the basis of the environmental factors outlined above, two important additional questions must be asked:

- By provisionally dropping portions of the candidate region from further immediate consideration, are areas offering significant or unique advantages being lost?

- Once the candidate areas have been identified, will the remaining range of siting choices they contain be too narrow and restricted?

The approach OWMC has adopted to this difficult problem is to introduce an additional group of land use factors:

- Agriculture: Regional agricultural information was used to determine if the search process was being restricted only to highly productive land.

- Industrially designated and publicly held land: Industrial and publicly held lands were examined to determine if significant opportunities for siting facility components on such lands were being lost or retained.

- Built-up areas and population density: Major built-up areas were delineated, as the facility components would not be sited within such areas; however, further consideration will be given to industrially designated vacant lands within built-up areas. Population densities were also determined.

One final note. A system of checks and balances is used for these new Step 2 factors. This means that when consideration is given to eliminating an area, because of the transportation factor for example, consideration must also be given to other general characteristics of the area: hydrogeological conditions, air dispersion, surface water, agricultural characteristics, population densities and the possible presence of public land assemblies and industrial lands. Areas are excluded only if they fail

to meet basic environmental criteria or they have a low likelihood of suitability relative to the areas retained. In each case the reasoning for excluding areas at this time is provided. The areas rejected at this stage remain subject to reconsideration if suitable sites are not identified in the subsequent analysis of the candidate areas selected.

Step 3 - Identifying Candidate Sites within Candidate Areas

Step 3 has undergone the most significant changes from the original proposal in the Phase 2 Report, as the result of two influences - public comment and a more detailed internal review of the factors to be used at this stage. In both cases, the message was clear. "Do not compromise environmental safety. Also, assess local land use policies in your search for industrially designated and publicly held land. Include a broader range of land use and socioeconomic factors when evaluating these lands."

Once the candidate areas have been identified the search process for sites will be divided into two parallel streams of activities. First, the industrially designated and publicly held lands will be reviewed in greater detail using such considerations as existing, committed and planned uses, parcel size and configuration. All sites feasible for one or more of the facility components within these areas will be identified.

Second, a range of physical, biological, land use, transportation and socioeconomic considerations will be identified and mapped within the remaining private non-industrial lands. Initially the focus will be on identifying features such as environmentally sensitive areas, highly specialized crop lands, and areas committed for residential development which clearly are not suitable for the facility components. Once these unacceptable areas have been dropped from consideration the focus will shift to the identification of lands which seem relatively more suited to the type of facilities envisioned. During this stage it is expected that factors such as parcel size and configuration, access, land use characteristics, and biophysical conditions will be used to identify and delineate potential sites (See Table 1).

At this point it is expected that there will be a lengthy list of potential sites scattered across the candidate areas, and it is anticipated that many of these sites eventually will be found to be relatively unsuitable. A small number of screening criteria will be formulated at this point to assist in reducing the number of potential sites. These criteria will include such concerns as basic land use conflicts, potentially severe environmental impacts, potentially severe social and economic impacts, and unfavourable regional or local access conditions.

The list of factors presented is subject to further review, alteration and confirmation in the future, after more site-specific information and further comment from the public are available.

Step 4 - Comparing Candidate Sites and Selecting Preferred Sites for Detailed Testing

Step 4 will consist of a detailed comparative evaluation of a smaller number of sites. The detailed comparative evaluation will involve consideration of a broad range of physical, environmental, land use, transportation, social, economic and financial considerations (see Table 2). In the rural areas particular attention will be devoted to agricultural concerns.

Conceptual designs of facility components will be prepared for each site to assist in the analysis of risks and impacts as well as to facilitate the public consultation process. Agency contacts, field investigations and discussions with potentially affected groups and individuals will be especially important during this stage.

The completion of Step 4 will signify the end of Phase 3 and a Phase 3 report will be issued announcing the location of the candidate sites.

Step 5 - Detailed Testing of Preferred Sites

The Corporation will select the top ranked sites for detailed field investigations. These investigations will include detailed hydrogeological, water and air dispersion, and natural environmental modelling and testing.

The product of this step will be the selection of the actual site(s) that will form the basis of the OWMC proposal to the Hearing Panel.

Table 1

FACTORS TO BE USED IN IDENTIFYING SITES

(not ranked)

PHYSICAL AND BIOLOGICAL ENVIRONMENT

- Physical and biological constraints, e.g., flood-prone lands
- Geologic landform constraints
- Air quality and meteorological constraints
- Surface water constraints, e.g., effluent dispersion/ assimilative capacities
- Environmentally significant areas

TRANSPORTATION

- Haulage distance
- Availability and distance from freeways
- Availability and distance from provincial highways (other than freeways)
- Availability and distance from regional roads

LAND USE AND LAND OWNERSHIP

- Industrially designated and publicly held lands
- Agricultural land capability
- Agricultural land uses, e.g., specialty crops
- Capability for other resources, e.g., forestry, sand and gravel extraction
- Other resource uses
- Federal and Provincial planning, e.g., Niagara Escarpment Planning Area
- Native communities
- Major incompatible uses, e.g., airports
- Comparable uses, e.g., other landfills
- Existing, planned and proposed land uses, e.g., residential
- Land ownership patterns

SOCIOECONOMIC

- Population density and distribution
- Population characteristics
- Recreational and tourist resources and amenities
- Archaeological sites
- Historical and cultural sites and features
- General community character and lifestyle
- Regional economic characteristics
- Land economics, e.g., agriculture
- Local government institutions

TECHNICAL/FINANCIAL

- Proximity to suitable sewerage systems
- Proximity to suitable receiving bodies of water
- Major utilities, e.g., pipelines and transmission lines
- Parcel size and configuration

Table 2

FACTORS TO BE USED IN COMPARING AND EVALUATING SITES

(not ranked)

PHYSICAL AND BIOLOGICAL ENVIRONMENT

- Topography
- Geology
- Hydrogeology
- Local climate and meteorology
- Surface water
- Vegetation and wildlife
- Rare and endangered species
- Environmental sensitivity

TRANSPORTATION

- Time and distance by type of road
- Accident frequency
- Number and type of water crossing bridges, culverts, embankments
- Traffic generated
- Use of local access roads, e.g., school bus routes
- Proximity to secondary transportation modes, e.g., rail
- Access road characteristics, e.g., volume, level of service

LAND USE AND LAND OWNERSHIP

- Uses displaced
- Physical suitability for resource uses, e.g., agriculture, forestry
- Existing, planned and proposed land-uses
- Federal, Provincial and municipal policies, projects and facilities
- Sensitive uses, e.g., hospitals, schools
- Development potential
- Site ownership
- Ownership patterns, e.g., disruption of holdings

SOCIOECONOMIC

- Local employment generated
- Number and characteristics of people and businesses displaced
- Population levels and characteristics
- Recreation resources and amenities
- Community facilities, services, and resources
- Archaeological sites and resources
- Cultural and historical facilities and resources, e.g., cemeteries, historic sites
- Noise
- Visual effects, e.g., privacy, views
- Local economic activities, e.g., farm operators
- Community lifestyle, image and character
- Emergency facilities, e.g., hospitals, fire departments
- Municipal finance

TECHNICAL/FINANCIAL

- Site acquisition costs
- Site development costs
- Off-site development costs, e.g., road improvements
- Operational costs
- Haulage costs
- Suitability for partially integrated facilities
- Suitability for fully integrated facilities

The Selection of Candidate Areas

INTRODUCTION

This chapter outlines in detail the use of the Step 2 factors described in Chapter 3, resulting in the definition of candidate areas in the Golden Horseshoe. Following an outline of the environmental and land use factors and their application to the Golden Horseshoe Zones 1 and 2, the chapter then describes, in table form, those areas which have been eliminated, and outlines the key characteristics of the candidate areas.

SEARCH AND SELECTION PRINCIPLES

The process of identifying candidate areas has been designed to comply with the general search and selection principles described in the previous chapter. The intent of the search process is to identify broad areas within the Golden Horseshoe which are suitable for the detailed analysis required to identify candidate sites. The procedure adopted for identifying candidate areas has been shaped by the following principles:

- a second natural level of protection of the environment beyond that provided for by the design and operating procedures of the facility component is essential.

- likelihood of suitability. Because the factors addressed at this stage are at a broad regional scale, the suitability of a selected candidate area can be expressed at this stage only as a likelihood subject to later, more detailed investigations.

- The maintenance of choice. As exclusion and inclusion decisions are made, there must be the assurance at each step of the process that no significant or unique alternatives are being discarded.

CANDIDATE AREA CONSIDERATIONS

As outlined in the previous chapter, the identification of candidate areas utilizes two categories of factors:

- factors which concern either the receiving environment, providing for a second level of protection, or the reduction of risk. The factors which fall into this category are hydrogeology, atmospheric dispersion, surface waters and transportation.

- factors which concern the need to maintain a range of choices at the site identification stage. The factors which fall into this category are agriculture, industrially designated and publicly held lands, built-up areas and population density.

A) Environmental Factors

Prior to the selection of candidate areas, it was necessary to study each of the Step 2 environmental siting factors. The following is a summary of the key findings of each factor that have led to the inclusion and exclusion of areas within the Golden Horseshoe region. A more detailed analysis of each factor is contained in the background technical reports listed in Appendix A.

1) Hydrogeology

A report analyzing hydrogeological considerations in siting industrial waste management facilities suggested that OWMC concentrate its search for facilities for all components in areas characterized by silt and clay textured soils. These soils provide the greatest amount of natural protection for groundwater resources. Furthermore, the investigation suggested that "Those areas of the Golden Horseshoe suspected to be underlain by coarser textured soils or where the geology ... is complex should only be considered for potential siting of facilities if suitable sites cannot be found in those areas underlain by deep fine-textured soils."

Using the above considerations to identify areas for further analysis, the study went on to assess these areas in terms of their possible suitability for a landfill and for either a physical/chemical treatment plant or an incinerator. Lands were identified as having the most likely hydrogeological conditions for the siting of a landfill or an integrated facility. Lands were also identified having the least hydrogeological restriction for siting a physical/chemical plant or incinerator. The study recommended that OWMC concentrate its search for all components in the higher categories established in each case described above.

These analyses resulted in the identification of areas which should be excluded from further examination at this time for all components, based on hydrogeological considerations. (See Map 1, "Areas excluded for any facility component.")

2) **Atmospheric Dispersion**

The primary objective of the atmospheric dispersion study was to provide information on atmospheric conditions in the Golden Horseshoe area. More specifically, the study presented:

- The potential effects of lake breezes, urban heat islands and topographical features on the dispersion of scrubbed gases.
- A rationale for using these air dispersion constraints as an important factor in identifying suitable sites for an incineration complex.

Areas where inadequate dispersion conditions can occur may be summarized as follows:

- Urban areas with a population greater than approximately 40,000.
- Land within five kilometres of the shorelines of Lake Ontario and Lake Erie.
- Lands near the base of the Niagara escarpment.

Most lands within hydrogeological Zones 1 and 2 of the Golden Horseshoe are not considered to be under the influence of these atmospheric constraints. However, there is also a need to consider the relative potential for impingement of emissions downwind of candidate areas. Such considerations will be a component of future studies dealing with specific candidate areas and sites.

3) Surface Waters

The surface water analysis focused on the relative suitability of areas for the discharge of treated effluent from OWMC's facilities, either into a sewage system or directly into a receiving body of water.

The following basic information was assessed:

(i) important water uses - municipal and industrial intakes and outfalls; supervised beaches; designated anchorage areas; fish spawning areas; commercial fisheries

(ii) major water courses with flows providing greater than 1000:1 dilution for a 10 Litres per second discharge

(iii) coastal zones of Lakes Ontario and Erie in the study region where dispersion characteristics are variable.

This basic information was interpreted and surface waters of the Golden Horseshoe were divided into four major categories based on dispersion capabilities and the possibility of interfering with existing uses. These categories are summarized as follows:

Category	Characteristics
1	High flow or consistent dispersion characteristics; low possibility of use interference
2	Variable dispersion characteristics; low possibility of use interference
3	Variable dispersion characteristics; higher possibility of use interference
4	Anchorage areas

4) Transportation Considerations

Two factors that can be introduced at the candidate area stage and which broadly reflect the need to minimize transportation costs and risks are travel time from the centroid of waste generation and travel time from 400-series highways.

A centroid of waste generation is a theoretical location which minimizes the distance from all sources of wastes. Travel time contours from the centroid were plotted to provide a general indication of the need to minimize total haulage distances. As more detailed information becomes available on the types and quantities of wastes which will be treated and disposed of at OWMC facilities, there could be some shifts in the location of the centroid, although they are not expected to affect the general haulage distance patterns significantly.

The second transportation factor - travel time from 400-series highways - recognizes the desirability of using the existing provincial highway system to provide the major access to the facility components. The accident rates for provincial highways, particularly those in the 400-series, tend to be lower than for local roads. Highways in the 400-series have the additional advantages of controlled access, no stopping, little variation in speed zones and high design standards.

Travel time contours and distance from the centroid of waste generation indicate a general regional pattern which could be used in conjunction with other factors.

B) Land Use

1) Agriculture

Most land areas, resources, and environmental features in the Golden Horseshoe study area are relatively small in area or are reasonably well-defined. As such they can be readily incorporated into the site

identification stage of the search process. Agriculture, however, takes up a large portion of the Golden Horseshoe Zones 1 and 2, and can be considered in terms of regional patterns. The consideration of broad agricultural patterns at the candidate area stage has the additional advantage of guarding against two potential dangers:

- The candidate areas which are defined by the other factors may be delineated in a manner that restricts the search process only to highly productive agricultural lands.

- The portions of the candidate region which are dropped from further consideration could include poor agricultural lands or lands which are not in production.

To ensure that an accurate sense of the agricultural communities is obtained, three major data sources were used, each reflecting a somewhat different orientation.

Data on soil capability for agriculture were obtained from the Canada Land Inventory (CLI) Soil Capability for Agriculture, provincial publications available at a scale of 1:50,000. Soil capability for agriculture is an expression of the quality of the soils and land resources. The higher the capability, the better the productive capacity on a sustained cropping basis. The maps show the general distribution of the capability classes and the symbol, the class ranking, and the subclasses show the limitations to agricultural production and use. The subclasses express limitations due to soils, terrain, and climatic factors.

The Agricultural Land Use classification is an expression of different agricultural land use systems. The systems reflect intensity of use and represent cultivation patterns and uses: monoculture, or corn and grain rotational systems and hay, pasture and grazing systems. The classification also includes specialty agricultural uses such as orchards, vineyards, market gardens, tobacco farms, sod farms and nurseries. The system is comprehensive and includes wooded areas as well as idle agricultural land.

Interpretation of the land use patterns indicates the concentration of specialty crops and areas of intensive agricultural use. It also identifies areas of lower agricultural use and areas with idle agricultural land.

To obtain a general sense of the relative economic importance of different agricultural areas the following factors were applied using data from the 1981 Census of Canada. In each case the data were grouped into a series of classes and mapped. As the information is being used to obtain patterns of a regional scope, only information at the township or municipality level was used.

The factors and classifications used in the mapping are provided below:

- the area of census farm holdings as a percentage of the area of the municipality. (A census farm is one having annual sales of at least $250.) This factor provides a preliminary measure of the local significance of agriculture.

- the sales of farm products from census farms. The average gross sales of farm products sold per improved acreage from farms in the municipality provide a preliminary measure of relative economic productivity.

- the total farm capital for census farms. The average farm capital value (land, buildings, machinery, equipment, livestock, poultry) per acre in census farms within a municipality provides a preliminary measure of the economic value of the capitalization of agriculture.

It is recognized that the agricultural information used at this stage represents only a small number of indicators of agricultural capability, use and productivity. Although this information is appropriate as an overview, a much more detailed analysis of a broad range of agricultural considerations will be necessary at the site identification stage.

2) Industrial and Publicly Held Lands

In the Phase 2 Report it was indicated that the order of priority which would be given to land use would be 1) industrially designated land, 2) publicly held lands and 3) privately owned lands. All industrially designated lands and publicly held lands that are approximately 50 acres or more in size within hydrogeological Zones 1 and 2 were identified and mapped.

After reviewing the data and on the basis of comments received during the public consultation process, it became evident that the number and size of industrially designated and publicly held parcels did not offer the wide range of choices which was considered essential to support the search process. Focusing on industrially designated and publicly held lands was also considered to be inconsistent with the priority attached to the protection of the environment.

At the same time there are publicly held and industrially designated lands in the study region where the establishment of a special waste treatment facility might conflict with surrounding land uses to a lesser extent than would be the case in many areas predominantly in private ownership which are not industrially designated.

Therefore, it was decided that industrially designated and publicly held lands would not be discarded at this stage but held as a means of maintaining the range of choices available at the next stage.

3) Built-up Areas and Population Density

Built-up areas - where site development would necessitate the displacement of many existing buildings - clearly would not be suitable locations for a facility component. Partially developed fringe areas have not been eliminated to avoid the danger of restricting the range of potentially suitable sites only to rural sites in productive agricultural

areas. Consideration will also be given at the site identification stage to vacant industrially designated lands within built-up areas.

The delineation of existing urban development was undertaken using Ministry of Natural Resources 1:30,000 aerial photographs of the study region. Development associated with communities in excess of 20,000 people was considered as a basis for delineating candidate areas. The limits of urban development for smaller communities will be determined at the site identification stage.

Population density is another consideration which can be introduced at the candidate area stage.

There are no standards for what population levels surrounding a site might be acceptable. At the candidate area stage, however, it is considered important to ensure that there is a broad range of urban and rural population densities for comparative purposes. In this way, at the next stage when more detailed consideration is given to the number of people who might be affected by a facility, the candidate sites will not, for example, all be located in or close to heavily populated areas.

No areas will be eliminated at the candidate area stage on the basis of population densities; however, as outlined later, population densities were a consideration which reinforced other factors. Population density levels might also indicate a potential concern to be addressed at the site identification stage. Data from the 1981 Census were used to calculate urban and rural densities.

THE SELECTION OF CANDIDATE AREAS

Essentially, the process of selecting candidate areas involved using a series of overlay maps, utilizing the environmental and land use

considerations outlined in the previous sections of this chapter. Having identified the basic Step 2 considerations that bear on the siting of the three facility components, the process of applying these considerations followed these key steps:

- The exclusion of areas which failed to meet the Step 2 environmental requirements for the three facility components
- The identification of candidate areas relatively more suitable for each facility component.

1) **Areas Excluded**

The lower priority areas which have been excluded for all facility components within the Golden Horseshoe are outlined on Map 1, and the major reasons for the exclusion of these areas are summarized in Table 3. The following is an outline of those key reasons:

A Areas

In the A Areas outlined on Map 1, there is a low likelihood of finding a suitable site for any of the components. There is considerable variability in geologic materials and subsurface conditions in these areas and/or they mostly contain less than 10 metres of silt clay soils. These shortcomings would not provide the natural containment considered necessary to ensure a second level of environmental protection.

Part of the A Area - marked A-1 on the map - was initially identified as having the lowest priority because of its complex and variable soil conditions. The chances of finding the necessary soil conditions in Area A-1 are considered low because of the known widespread occurrence of buried sand at several levels. The balance of the region was then studied in more detail. The remaining A Areas were identified from this more detailed analysis.

In reviewing the characteristics of the candidate areas, it was evident that the exclusion of Area A-1 would mean that only small parcels of publicly held and industrially designated land will remain for the subsequent analysis. OWMC has decided to proceed with a further level of hydrogeological investigations for Area A-1 to maximize the opportunities for identifying candidate sites on non-agricultural land.

B Areas

B Areas are areas where air dispersion is a significant constraint. This is a particular concern for the incinerator, although it is also a consideration for the physical/chemical treatment plant and the engineered landfill, as outlined previously.

The two B Areas to the east and the west of St. Catharines are subject to the combined effects of all three air dispersion constraints - lake breeze, topography and urban heat island. These areas are also constrained by a heavy concentration of specialty agriculture and high rural and urban population densities. In view of these constraints, and the presence of more suitable areas in the same general vicinity, it was decided to exclude these two areas.

The other areas within the B Area are three narrow ribbons of land along the Niagara River subject to lake breeze effects. It was decided that these areas could be excluded as they are small and have no offsetting benefits relative to much larger candidate areas in the same vicinity.

C Area

The C Area is the area beyond the 30 minute travel time contour from the 400-series highways. As previously indicated, proximity to the 400-series highways is considered advantageous as such highways have lower accident rates than local roads and other provincial highways.

In the event of a spill or accident 400-series highways do not generally have development as close to the edge of the road.

In examining the area beyond the 30 minute travel time contour and comparing it to the candidate areas, it was evident that the C Area has no offsetting advantages as compared with the larger and more accessible candidate areas in terms of: industrially designated or publicly held lands; geological/hydrogeological conditions; surface water; agricultural productivity or capability; or population density.

D Areas

The D Areas are those areas which are completely built up based on recent aerial photography. Although the opportunities for establishing facility components within built-up areas are extremely small, consideration will be given to industrially designated vacant lands within built-up areas. It is anticipated that, at best, such areas might only be suitable for the establishment of a physical/chemical treatment plant.

2) **Areas Included**

The candidate areas that remain after the above exclusions are outlined on Map 2. Some of the candidate areas are potentially suitable for all facility components and others are potentially suitable for only one or two components. The major difference between the areas suitable for all components and the other candidate areas is the additional depth of soils required for an engineered landfill.

The presence of a single air dispersion constraint was also used as a basis for excluding areas for the incinerator. A single air dispersion constraint was not considered a sufficient reason to exclude an area for an engineered landfill or a physical/chemical treatment plant if that area had offsetting desirable characteristics.

Table 3

REASONS FOR EXCLUSION

TYPES OF AREAS EXCLUDED	HYDROGEOLOGICAL CONDITIONS	ATMOSPHERIC DISPERSION			TRANSPORTATION CONSIDERATIONS		SPECIALTY AGRICULTURE	MAJOR BUILT-UP AREAS	OTHER CONSIDERATIONS
		LAKE BREEZE	TOPOGRAPHIC FEATURES	URBAN HEAT ISLANDS	PROXIMITY TO 400 SERIES HIGHWAYS	REGIONAL ACCESS			
A	●								
B		●	●	●			●	○	No unique advantage
C	○				●	○			No unique advantage No industrially designated or publicly held land
D				○				●	

● PRIMARY

○ SECONDARY

Table 4 highlights the environmental and land use characteristics of each candidate area. Priorities for the site identification stage for each candidate area are also indicated on the tables.

When the candidate areas are compared, a number of general patterns are evident:

- A large proportion of the candidate areas are potentially suitable for two or three facility components. Thus, considerable potential remains for fully or partially integrated facilities.

- There are large candidate areas which potentially are geologically/hydrogeologically suitable for an engineered landfill. An even larger proportion of the candidate areas is potentially geologically/hydrogeologically suitable for a physical/chemical treatment plant.

- A relatively small area north of Lake Ontario is potentially suitable for the facility components.

- Air dispersion considerations affect a small share of the candidate areas at this stage but are likely to represent constraints for more of the candidate areas when local information is analyzed.

- A considerable range of choice remains among the candidate areas concerning receiving bodies of water into which treated effluent might be discharged.

- There is a substantial variation among the candidate areas in travel time to the centroid and to the 400-series highways.

- A high proportion of the candidate areas are in Class 1 and 2 agricultural capability and some of the candidate areas have Classes 3 and 4 land. The prevalence of Class 1 and 2 mirrors the general pattern exhibited throughout the Golden Horseshoe.

- The amount of specialty agriculture in the candidate areas is quite limited. It should be possible at the site identification stage to avoid the displacement of such uses.

- The candidate areas vary greatly in their proximity to urban centres as well as in their rural population densities.

- There is not much industrially designated and publicly held land in the candidate areas although there appears to be some potential for establishing sites in the vicinity of industrially designated areas. This limited range of choice led to a decision to undertake a further level of geological/hydrogeological analysis in Area A-1.

Looking Ahead

REMAINING PHASE 3 WORK

1) Data gathering and analysis

The identification of candidate areas has been accomplished largely by analyzing and interpreting available reports, records and data. This level of analysis was appropriate for the purpose of determining general probabilities of suitability and for analyzing regional patterns. As the geographic scope of the search and selection process narrows over the next several months, however, more detailed analyses are required.

Site-related information is required to distinguish among relatively suitable sites and to respond to the concerns of potentially affected industries, agencies, groups and individuals. This information will be obtained from a variety of sources, including all levels of government, universities and other educational and research institutions, interest groups, site visits and meetings and interviews with community leaders and residents. It will encompass a broad range of physical, biological, land use, transportation, social, economic and engineering considerations.

In the site identification stage a variety of federal and provincial agencies will be contacted and an extensive data base will be assembled. Considerable use will be made of census data, aerial photography, assessment data, and other primary and secondary information sources.

At the local level, a comparable round of agency meetings will be undertaken. Conservation authorities and municipal officials in, for example, planning, engineering, parks and recreation, administrative and finance departments, and local interest groups and institutions will be contacted. As with federal and provincial agencies, the intention will be to obtain relevant records, reports and plans, as well as the first-hand knowledge of officials and representatives.

In Step 4, candidate sites will be the subject of more detailed analysis and interpretation. Additional information concerning the sites, the areas in the vicinity of the sites, the access roads, and the communities likely to be affected will be obtained from government officials, private organizations, institutions and groups.

More detailed investigations of the sites and potentially affected areas will also be undertaken. These site and area visits will address such matters as land use, road conditions, and agricultural operations. A crucial source of information at this stage will be interviews with the residents and businesses who may be most directly affected by the facility. House-to-house and business-to-business interviews will be conducted to obtain information on well water quality, farming practices, rare or unusual plants and animals, land use and history, plans for property improvements, and household and lifestyle characteristics. These interviews also will serve to document the concerns and opinions of potentially affected residents and businesses.

In addition, meetings with community leaders will be held and community and business surveys may be undertaken. These surveys and meetings will serve to describe and analyze more precisely regional and community characteristics and potential impacts.

By using the diversity of information sources cited above, greater confidence can be placed in the analyses and interpretations which are undertaken. The potential will also be increased for identifying more desirable sites, avoiding the potential impacts and meeting the concerns associated with the preferred sites.

2) Public Consultation

An important source of information during both Steps 3 and 4 will be the public consultation program. This program will serve a number of important functions in the identification and comparative evaluation of sites:

- it will provide information on the sites and affected areas.

- it will provide information on community concerns and priorities. This information will assist in determining the relative importance of various evaluation factors and in identifying critical tradeoffs.

- it will serve as a check on the information obtained and the analysis undertaken.

To accomplish this, OWMC immediately will contact communities and organizations in the candidate areas. Much of this activity will initially involve the distribution of information and the scheduling of meetings where questions can be directed to Corporation officials and consultants. As the program evolves, however, opportunities for more detailed discussions will be developed, and the following specific initiatives are being considered:

- The establishment of candidate area liaison groups to ensure a regular flow of information between OWMC and representatives from these areas.

- A series of two-day seminars to be held in convenient locations throughout the candidate areas. These seminars would be similar in nature to the OWMC seminar held in Niagara-on-the-Lake in February, and would provide an opportunity for representatives from a cross-section of local and regional organizations to discuss the search and selection process and liquid industrial waste management issues generally.

- Contact will be made with existing provincial and local organizations, clubs, societies and interest groups in the candidate areas, and meetings with their membership scheduled.

- Workshops will be scheduled towards the latter part of the Phase 3 program for interested participants within the candidate areas to discuss specific technical issues with Corporation personnel.

In addition to these program, OWMC will be available to meet with interested groups at their request to discuss this report, and will be developing an information program in the candidate areas through regular radio and newspaper features.

OWMC expects that the entire Phase 3 program will conclude in the Fall with the selection of specific candidate sites. A final Phase 3 Report will be issued at that time.

Phase 4 will involve a comparison of these sites, which will lead to the selection of a short list. This short list - called preferred sites - will then be subjected to detailed, on-the-land studies during the remainder of Phase 4, and prior to the submission of OWMC's proposal to the Hearing Panel.

3) Facilities Development Process

In addition to the site selection and public consultation work which will be undertaken in the balance of Phase 3 and into Phase 4, further work will also be undertaken as part of the Facilities Development Process. Progressive refinements will be made to the estimate of the types and quantities of wastes OWMC expects to treat at its facilities, and to facility design issues such as site size and configuration, emission and effluent characteristics, and servicing requirements. Work will proceed on the development of operating procedures, monitoring, and contingency planning and closure procedures. Investigations of other proven treatment and disposal technologies will also continue. Much of this will be used to identify and evaluate sites.

Waste Reduction Opportunities

INTRODUCTION

In addition to the Phase 3 work outlined in the previous chapter, OWMC will be investigating ways in which it can assist industries in their efforts to reduce and recycle special wastes. As a basis for this work, the Corporation commissioned Proctor and Redfern Limited, the Ontario Research Foundation and Roy F. Weston Inc. in September 1982 to undertake a Waste Reduction Opportunities Study. This chapter is a brief summary of the results of that study; a full report of the study is available from OWMC, and is listed in Appendix A.

STUDY OBJECTIVES

This study had four major objectives:

1) to assemble information on efforts already being undertaken by Ontario industry to reduce the quantity of special wastes which must be treated;

2) to assess the impact that such waste reduction efforts will have on the quantity and nature of the wastes which will require treatment and disposal facilities in the province;

3) to survey other jurisdictions to determine what programs organizations similar in structure and mandate to OWMC are planning to encourage waste reduction; and

4) to suggest potentially useful roles for OWMC in the encouragement of waste reduction in Ontario.

STUDY APPROACH

Three representative industry sectors were chosen for study. They were the primary metals industry, the chemical manufacturing industry and the fabricated metal parts industry. These were selected based on the results of an earlier study which estimated that these three industry sectors are the generators of the largest quantities of industrial waste in Ontario, between them accounting for approximately 70 percent.

In addition to studying these three primary industry sectors, the existing recycling industry in Ontario was reviewed. Also, waste reduction approaches in two representative states in the United States were studied for their applicability to Ontario.

POTENTIAL ROLES

As a result of this survey, fourteen roles were suggested to OWMC for consideration. These would encourage waste abatement, reduction, reuse and recycling:

- pricing structure - OWMC must examine carefully the pricing structure that it decides to adopt for its waste treatment disposal services as this will influence the financial decisions of industries that have waste reduction alternatives;

- support of research and development - It was suggested that efforts be coordinated with the Ontario Ministry of the Environment, Environment Canada and relevant industry associations to support research and development both at OWMC facilities when they come onstream and at other research centres such as universities and foundations;

- information services - A need was perceived, particularly amongst smaller companies, for transfer of information on technical approaches to waste reduction;

- tax and legislation change to encourage waste recycling - Proposing tax incentives for recycling materials or waste abatement programs was perceived to be a useful role for OWMC to consider. For example, re-refined oil products were specifically cited as being taxed much more heavily in Canada than in some other jurisdictions;

- industry-specific seminars - Smaller companies felt that they could benefit greatly from industry-specific seminars provided that they addressed practical approaches to waste reduction in their sector. OWMC could take on this role;

- technical assistance - Because OWMC will have a skilled technical staff for its treatment and disposal facilities, its personnel constantly will be assessing the treatability of wastes. They will, of course, advise companies if such wastes are reusable or recyclable. They might also suggest ways that a company might reduce the quantity or degree of hazard of its waste;

- waste exchange - The technical staff could enhance the effectiveness of the Canadian Waste Materials Exchange (CWME) Program through their direct contacts with industry. The CWME in its turn will enhance the effectiveness of OWMC staff by broadening the potential markets for reusable wastes;

- library facility - Smaller to medium-sized companies would find it useful to have access to a section of the OWMC library devoted to waste abatement and reduction technology;

- expert site evaluations - On the recommendation of its technical staff, OWMC might consider carrying out an evaluation of waste reduction opportunities at a specific site in more detail. This would be undertaken as a representative demonstration of an industry sector situation;

- analytical services - A need for inexpensive analytical facilities to assess recyclability of waste streams was identified. An OWMC laboratory might be able to take on some of this responsibility, although there are extensive analytical services available presently in the private sector and in government;

- mobile plants - OWMC might be able to provide mobile plants for reducing the volume of waste prior to shipping. Better assessment of this need will be possible after OWMC's treatment and disposal facilities have been in operation for a few years;

- transportation of reusable materials - Some waste streams are reusable but, because of geographic location, transportation costs make their reuse economically unrealistic. OWMC may be able to utilize transportation networks to deliver these wastes closer to their market;

- bulking of small quantities of recyclable materials - Often the volumes of recyclable materials are too small to be of economic interest to recyclers. Although bulking was favoured, there was some concern that the bulked materials might vary widely in quality. Therefore, there must be an acceptable quality assurance program to mitigate these fears;

- OWMC operation of recycling facilities - Although there was some support for this role, the need for this activity should be assessed only after treatment facilities have become operational.

CONCLUSIONS

The major conclusions drawn from this study are as follows:

1) that the three Ontario industry sectors surveyed already are making significant efforts in waste abatement, reduction, reuse and recycling.

2) that, in the main, large companies are better able to adopt such practices because of some or all of the following:

- in-house technical expertise on the best approaches available;
- larger waste streams making economic recovery, reuse or recycling more feasible;
- a greater economic penalty because of the much larger waste volumes if treatment and disposal are chosen over reduction and recovery.

3) that the major reason for companies adopting waste abatement reduction, reuse and recycling is the cost of proper treatment and disposal prices.

4) that the trends expected in waste quantities remaining for treatment and disposal will be downward over the next few years.

5) that a well-established recycling industry exists in Ontario, particularly for:

- solvents
- waste oils
- oily water
- steel pickling liquors

6) that some smaller to medium-sized companies having waste problems would welcome some assistance from an organization such as OWMC to help establish procedures to abate, reduce and/or reuse or recycle those wastes.

7) that there are fourteen specific potential roles for OWMC to consider to help industry realize reduction opportunities.

8) that the awareness of OWMC's existence and purpose is quite low amongst the companies surveyed.

OWMC is presently studying these recommendations, and will be seeking public reaction to them over the coming months. In the meantime, steps will be taken to recruit appropriate staff to begin addressing these issues.

APPENDIX A

PHASE THREE BACKGROUND STUDY REPORTS

1. Hydrogeologic Considerations for Facilities Siting
   Gartner Lee Associates Limited

2. Interim Report on Priority of Study of Zone 1 and 2 Lands - Golden Horseshoe Geological Considerations
   Gartner Lee Associates Limited

3. Air Dispersal Constraints
   Ontario Research Foundation for
   Gartner Lee Associates Limited

4. Phase 3 Interim Report Map Portfolio

5. Waste Reduction Opportunities Study
   Ontario Research Foundation
   Proctor & Redfern Limited
   Weston Designers - Consultants

For a copy of these studies, please contact the following, indicating which study reports are required:

Michael Scott,
Director of Communications,
Ontario Waste Management Corporation
2 Bloor Street West, 11th Floor
Toronto, Ontario M4W 3E2
1-800-268-1179 (Toll Free)

APPENDIX B

PHASE 3 - PUBLIC CONSULTATION MEETINGS

Regional Meetings:

Malvern Radioactive Account Committee
Toronto, Ontario
4:30 p.m. - January 25, 1983

Carl M. Lewis
Toronto, Ontario
5:00 p.m. - January 25, 1983

The Greenpeace Foundation
Toronto, Ontario
5:30 p.m. - January 25, 1983

Town of Caledon and Regional Municipality of Peel
Brampton, Ontario
8:30 p.m. - February 2, 1983

Regional Municipality of Peel Citizens Advisory Committee
Brampton, Ontario
11:00 a.m. - February 2, 1983

Association of Peel People Evaluating Agricultural Land
Brampton, Ontario
2:00 p.m. - February 2, 1983

City of Brampton
Brampton, Ontario
3:30 p.m. - February 2, 1983

Aldermen, City of Brampton
Councillors, City of Brampton
Mayor, City of Brampton
Region of Peel

Meadowwood Rattray Residents Asscciation
Brampton, Ontario
6:30 p.m. - February 2, 1983

Regional Municipality of Hamilton-Wentworth
Hamilton, Ontario
9:00 a.m. February 4, 1983

The United Church of Canada
Hamilton, Ontario
10:00 a.m. February 4, 1983

Regional Municipality of Halton
Hamilton, Ontario
1:00 p.m. - February 4, 1983

Region of Halton
City of Burlington
Halton Region Conservation Authority
Town of Halton Hills

F. Zaporzon and City of Nanticoke
Hamilton, Ontario
2:30 p.m. - February 4, 1983

Town of Ancaster
Hamilton, Ontario
3:30 p.m. - February 4, 1983

Township of Glanbrook
Hamilton, Ontario
6:30 p.m. - February 4, 1983

Township of Onondaga and Citizens Against
Middleport Storage of PCBs
Hamilton, Ontario
7:30 p.m. February 4, 1983

Durham Chapter of the Urban Development Institute
Oshawa, Ontario
8:30 a.m. - February 8, 1983

Central Lake Ontario Conservation Authority
Oshawa, Ontario
9:00 a.m. - February 8, 1983

Federation of Ontario Cottagers
Oshawa, Ontario
10:00 a.m. - February 8, 1983

Town of Newcastle
Oshawa, Ontario
11:00 a.m. - February 8, 1983

Town of Milton
Oshawa, Ontario
1:00 p.m. - February 8, 1983

Town of Ajax
Oshawa, Ontario
2:00 p.m. - February 8, 1983

Regional Municipality of Durham
Oshawa, Ontario
3:30 p.m. - February 8, 1983

Town of Pickering and East Rouge Residents Association
Oshawa, Ontario
4:30 p.m. - February 8, 1983

Ajax Citizens Together
Oshawa, Ontario
7:00 p.m. - February 8, 1983

Pickering Naturalists Assocation
Oshawa, Ontario
8:00 p.m. - February 8, 1983

Town of Whitchurch-Stouffville
Richmond Hill, Ontario
10:00 a.m. - February 15, 1983

Don Cousens, M.P.P. York Centre
Richmond Hill, Ontario
11:00 a.m. - February 15, 1983

S. Soave
Richmond Hill, Ontario
1:00 p.m. - February 15, 1983

Federation of Ontario Naturalists
Richmond Hill, Ontario
1:45 p.m. - February 15, 1983

Binbrook Black Heath Pastoral Charge
Richmond Hill, Ontario
3:30 p.m. - February 15, 1983

City of Richmond Hill
Richmond Hill, Ontario
6:30 p.m. - February 15, 1983

Ernest and Francis Redelmeier
Richmond Hill, Ontario
7:30 p.m. - February 15, 1983

Provincial Council of Women of Ontario
St. Catharines, Ontario
9:00 a.m. - February 17, 1983

Chippawa Watershed Association
St. Catharines, Ontario
10:00 a.m. - February 17, 1983

Operation Clean
St. Catharines, Ontario
11:00 a.m. - February 17, 1983

Waste Management Committee - Niagara Chamber of Commerce
St. Catharines, Ontario
11:30 a.m. - February 17, 1983

Guelph University
St. Catharines, Ontario
12:00 p.m. - February 17, 1983

Preservation of Agricultural Lands Society
St. Catharines, Ontario
2:00 p.m. - February 17, 1983

R. Janzen
St. Catharines, Ontario
3:00 p.m. - February 17, 1983

Better Understanding Committee
St. Catharines, Ontario
3:30 p.m. - February 17, 1983

Syntath
St. Catharines, Ontario
4:30 p.m. - February 17, 1983

Region of Niagara
St. Catharines, Ontario
5:30 p.m. - February 17, 1983

Great Lakes Tomorrow
St. Catharines, Ontario
6:30 p.m. - February 17, 1983

Township of Wainfleet
St. Catharines, Ontario
7:30 p.m. - February 17, 1983

City of Niagara Falls
St. Catharines, Ontario
8:00 p.m. - February 17, 1983

Supplemental Meetings:

Metro Toronto Fire Chiefs
Toronto, Ontario
January 6, 1983

Preservation of Agricultural Lands Society (PALS)
Toronto, Ontario
January 14, 1983

City of Welland
Toronto, Ontario
February 22, 1983

City of Norfolk
Toronto, Ontario
February 27, 1983

A. MacKinnon
Toronto, Ontario
March 4, 1983

Township of Glanbrook
Glanbrook, Ontario
March 7, 1983

Regional Municipality of Haldimand-Norfolk
Haldimand, Ontario
March 14, 1983

City of Dunnville
Dunnville, Ontario
March 14, 1983

Regional Municipality of Hamilton-Wentworth
Hamilton, Ontario
April 5, 1983

Regional Municipality of Peel
Bramalea, Ontario
April 14, 1983

Regional Municipality of Peel
Council Chambers, City Hall
1:30 p.m.
Bramalea, Ontario
April 14, 1983

APPENDIX C

WRITTEN SUBMISSIONS UP TO THE PHASE 3 INTERIM REPORT

1. Resolution R83-3
   Council of the Township of King
   January 17, 1983

2. Resolution passed by the Council of the County of Brant
   The Corporation of the County of Brant
   January 19, 1983

3. Resolution 83-49
   Peel Regional Council
   January 27, 1983

4. Statement to Ontario Waste Management Corporation
   Association of Peel People Evaluating Agricultural Land
   February 2, 1983

5. List of Questions submitted to OWMC
   Regional Municipality of Halton
   February 4, 1983

6. Statement to Ontario Waste Management Corporation
   Ajax Citizens Together
   February 8, 1983

7. Statement to Ontario Waste Management Corporation
   Town of Newcastle
   February 8, 1983

8. List of Questions submitted to OWMC
   Town of Milton
   February 8, 1983

9. Statement to Ontario Waste Management Corporation
   Sheila Soave
   February 9, 1983

10. Statement to Ontario Waste Management Corporation
    Don Cousens, M.P.P York Centre
    February 15, 1983

11. Statement to Ontario Waste Management Corporation
    Town of Whitchurch-Stouffville
    February 15, 1983

12. Statement to Ontario Waste Management Corporation
    Binbrook Black Heath Pastoral Charge
    February 15, 1983

13. Motion to Ontario Waste Management Corporation
    Niagara Regional Chamber of Commerce
    Waste Disposal Committee
    February 16, 1983

14. Statement to Ontario Waste Management Corporation
    St. Catharines Council of Women
    February 17, 1983

15. Statement to Ontario Waste Management Corporation
    Chippawa Watershed Association
    February 17, 1983

16. Report to Ontario Waste Management Corporation
    University of Guelph
    February 17, 1983

17. Statement to Ontario Waste Management Corporation
    Preservation of Agricultural Lands Society
    February 17, 1983

18. Statement to Ontario Waste Management Corporation
    Syntath Limited
    February 17, 1983

19. Statement to Ontario Waste Management Corporation
    Great Lakes Tomorrow Seminar Group
    Pat Hayes
    February 17, 1983

20. Statement to Dr. D.A. Chant
    Council of the Corporation of the Township of Wainfleet
    February 17, 1983

21. List of questions submitted to Ontario Waste Management Corporation
    City of Niagara Falls
    February 17, 1983

22. "Response to Facilities Development Process - Phase 2"
    Regional Municipality of Niagara
    Planning and Development Department
    March 4, 1983

23. Statement to Ontario Waste Management Corporation
    Director of Planning and Development, and
    Director of Public Works
    Regional Municipality of Halton
    March 10, 1983

APPENDIX D

ONMC SEMINAR ON INDUSTRIAL WASTE MANAGEMENT

Niagara Institute - February 11-13, 1983
Niagara-on-the-Lake, Ontario

LIST OF PARTICIPANTS

Mrs. Eleanor Black
CHIPPAWA WATERSHED ASSOCIATION

Mr. Al Bowers
THE ASSOCIATION OF MUNICIPALITIES OF ONTARIO

Ms. Moni Campbell
POLLUTION PROBE

Mr. Harvey Clare
THE CONSERVATION COUNCIL OF ONTARIO

Mrs. Leslie Daniels
BETTER UNDERSTANDING COMMITTEE, Thorold, Ontario

Mr. John Eleen
ONTARIO FEDERATON OF LABOUR

Mrs. Joan Field
CONSUMERS' ASSOCIATION OF ONTARIO

Mr. Stephen Flott
ONTARIO TRUCKING ASSOCIATION

Ms. Hedy Gervais
UPPER OTTAWA STREET LANDFILL ASSOCIATION

Ms. Gayle Hall
THE NIAGARA PENINSULA CONSERVATION AUTHORITY

Dr. Neva Hilliard
ONTARIO MEDICAL ASSOCIATION

Mr. Brian Hindley
METRO REGION CONSERVATION AUTHORITY

Mr. John Jackson
ONTARIO PUBLIC INTEREST RESEARCH GROUPS

Rev. Leslie King
UNITED CHURCH OF CANADA

Mr. Doug Lisle
THE CANADIAN CHEMICAL PRODUCERS' ASSOCIATION

Mr. Dan MacDougall
CANADIAN MANUFACTURERS' ASSOCIATION

Ms. Bea Olivastri
CANADIAN ASSOCIATION FOR ADULT EDUCATION

Mr. Kenneth Owen
CREDIT VALLEY CONSERVATION AUTHORITY

Mr. Harry Pelissero, Jr.
ONTARIO FEDERATION OF AGRICULTURE

Mr. Jack Rosen
THE CANADIAN ASSOCIATION FOR RECYCLING INDUSTRIES

Mr. Al Schuldt
THE CANADIAN STEEL ENVIRONMENTAL ASSOCIATION

Dr. Farhad Self
THE PETROLEUM ASSOCIATION FOR CONSERVATION OF THE CANADIAN ENVIRONMENT

Mr. Tony Smith
GRAND RIVER CONSERVATION AUTHORITY

Mr. Wellington Staats
SIX NATIONS COUNCIL

Ms. Toby Vigod
CANADIAN ENVIRONMENTAL LAW ASSOCIATION

Mr. George Voth
THE ASSOCIATION OF MUNICIPALITIES OF ONTARIO

Mr. R.A.G. Simmons
METROPOLITAN TORONTO BOARD OF TRADE

Mr. Allan Taylor
ONTARIO PAINT ASSOCIATION

APPENDIX E

The Interim Phase 3 Report will be placed on deposit in the following locations:

A) Government Libraries

1. Ministry of the Environment
   Departmental Library
   135 St. Clair Avenue West
   Toronto, Ontario
   M4V 1P5

2. Environment Canada
   Department Library
   Place Vincent Massey
   Hull, Quebec
   K1A 1C7

B) Ontario University Libraries

1. Brock University
   University Library
   St. Catharines, Ontario
   L2S 3A1

2. Carleton University
   University Library
   Ottawa, Ontario
   K1S 5B6

3. University of Guelph
   University Library
   Guelph, Ontario
   N1G 2W1

4. Lakehead University
   University Library
   Thunder Bay, Ontario
   P7B 5E1

5. Laurentian University of Sudbury
   University Library
   Sudbury, Ontario
   P3E 2C6

6. McMaster University
   University Library
   Hamilton, Ontario
   L8S 4L8

7. University of Ottawa
   University Library
   Ottawa, Ontario
   K1N 6N5

8. Queen's University
   University Library
   Kingston, Ontario
   K7L 3N6

9. University of Toronto
   University Library
   Toronto, Ontario
   M5J 2H7

10. Trent University
    University Library
    Peterborough, Ontario
    K9J 7B8

11. University of Waterloo
    University Library
    Waterloo, Ontario
    N2L 3G1

12. University of Western Ontario
    University Library
    London, Ontario
    N6A 3K7

13. Wilfrid Laurier University
    University Library
    Waterloo, Ontario
    N2L 3C5

14. University of Windsor
    University Library
    Windsor, Ontario
    N9B 3P4

15. York University
    University Library
    Toronto, Ontario
    M3J 1P3

C) Regional Libraries

1. Algonquin Regional Library System
   29 Mary Street
   Parry Sound, Ontario
   P2A 1E3

2. Central Ontario Regional Library System
   129 Church Street South
   Richmond Hill, Ontario
   L4C 1W4

3. Chatham Library
   120 Queen Street
   Chatham, Ontario
   N7M 2G6

4. Eastern Ontario Regional Library System
   200 Cooper Street, Suite 6
   Ottawa, Ontario
   K2P 0G1

5. Georgian Bay Regional Library System
   30 Morrow Road
   Barrie, Ontario
   L4N 3V8

6. Lake Erie Regional Library System
   380 Saskatoon Street
   London, Ontario
   N5W 4R3

7. Lake Ontario Regional Library System
   88 Wright Crescent
   Kingston, Ontario
   K7L 4T9

8. Metro Toronto Library Board
   789 Yonge Street
   Toronto, Ontario
   M4W 2G8

9. Midwestern Regional Library System
637 Victoria Street North
Kitchener, Ontario
N2H 5G4

10. Niagara Regional Library System
54 Church Street
St. Catharines, Ontario
L2T 7K2

11. North Central Regional Library System
334 Regent Street South
Sudbury, Ontario
P3C 4E2

12. Northeastern Regional Library System
6 Al Wende Avenue
Kirkland Lake, Ontario
P2N 3G9

13. Northwestern Regional Library System
910 Victoria Avenue
Thunder Bay, Ontario
P7C 1B4

14. Sarnia Library
124 Christina Street South
Sarnia, Ontario
N7T 2M6

15. South Central Regional Library System
220 Dundurn Street South
Hamilton, Ontario
L8P 4K7

16. Southwestern Regional Library System
660 Ouellette Avenue
Suite 216
Windsor, Ontario
N9A 1C1

17. Waterloo Regional Library System
Marsland Centre
7th Floor, 20 Erb Street West
Waterloo, Ontario
N2J 4G7

D) Candidate Area Libraries

1. Ancaster Branch
Wentworth Public Library Board
300 Wilson Street East
Ancaster, Ontario
L9G 2B9

2. Brampton Public Library Board
65 Queen Street East
Brampton, Ontario
L6W 3L6

3. Brantford Public Library Board
73 George Street
Brantford, Ontario
N3T 2Y3

4. Burlington Public Library Board
2331 New Street
Burlington, Ontario
L7R 1J4

5. Caledon Public Library Board
P.O. Box 1000
Municipal Complex
Caledon East, Ontario
L0N 1E0

6. Cayuga Branch
Haldimand Public Library Board
Cayuga Street
Cayuga, ontario
N0A 1E0

7. Dundas Public Library Board
18 Ogilvie Street
Dundas, Ontario
L9H 2S2

8. Dunnville Public Library Board
106 Main Street West
Dunnville, Ontario
N1A 1W1

9. Fort Erie Public Library Board
136 Gilmore Road
Fort Erie, Ontario

10. Grimsby Public Library Board
25 Adelaide Street
Grimsby, Ontario
L3M 1X2

11. Halton Hills Public Library Board
9 Church Street
Georgetown, Ontario
L7G 2A3

12. Hamilton Public Library Board
55 York Blvd.
Hamilton, Ontario
L8R 3X1

13. Lincoln Public Library Board
10 Church Street
P.O. Box 460
Beamsville, Ontario
L0R 1B0

14. Milton Public Library Board
45 Bruce Street
Milton, Ontario
L9T 2L5

15. Mississauga Public Library Board
1350 Burnhamthorpe Road East
Mississauga, Ontario
L4Y 3V9

16. Mount Hope Branch
Wentworth Library Board
Airport and Homestead Drive
Mount Hope, Ontario
L0R 1W0

17. Niagara Falls Public Library Board
4848 Victoria Avenue
Niagara Falls, Ontario
L2E 4C5

18. Niagara-on-the-Lake Public Library Board
P.O. Box 430
Rear - 26 Queen Street
Niagara-on-the-Lake, Ontario
L0S 1J0

19. Norfolk Twp. Public Library Board
P.O. Box 159
Langton, Ontario
N0E 1G0

20. Oakville Public Library Board
120 Navy Street
Oakville, Ontario
L6J 2Z4

21. Pelham Public Library Board
P.O. Box 830
Fonthill, Ontario
L0S 1E0

22. Port Colborne Public Library Board
310 King Street
Port Colborne, Ontario
L3K 4H1

23. Port Dover Centennial Branch
Nanticoke Public Library Board
413 Main Street
P.O. Box 909
Port Dover, Ontario
N0A 1N0

24. St. Catharines Public Library Board
54 Church Street
St. Catharines, Ontario
L2R 7K2

25. Six Nations of the Grand River
Indian Band Library
Ohsweken, Ontario
N0A 1M0

26. Thorold Public Library Board
1 Ormond Street South
Thorold, Ontario
L2V 1X9

27. Wainfleet Twp. Public Library Board
1949 Park Street
Wainfleet, Ontario
L0S 1V0

28. Welland Public Library Board
140 King Street
Welland, Ontario
L3B 3J3

29. West Lincoln Twp. Public Library Board
P.O. Box 164
Smithville, Ontario
L0R 2A0

APPENDIX F

QUESTIONS AND ANSWERS - PHASE 3 PUBLIC CONSULTATION PROGRAM

The following is a summary of the most frequently asked questions in the Phase 3 Public Consultation Program to date. Reference should be made to Chapter 2 of this report for an outline of the program and key issues raised.

Waste Management

- **Who will pay for the treatment of wastes at OWMC facilities? Will OWMC recover costs? How much will it cost to build an OWMC facility?**

  It has been indicated that capital costs to establish an OWMC waste management facility will be in the form of a grant from the provincial government. In 1983, the cost to build an OWMC facility is estimated to be from 80 to 100 million dollars and it is quite possible the figure will ultimately be higher. It is hoped that OWMC facilities eventually will operate on a user-pays, break-even basis, with waste producers paying the full costs of waste transportation and treatment.

- **Are there any new developments concerning interim measures for waste treatment?**

  OWMC is completing a study on mobile facilities, and while the Corporation is directing most of its time and energy towards its principal task of establishing permanent waste management facilities, we will be hiring staff to develop research and recycling initiatives, and to assist in the examination of other interim measures. So far the public generally has been supportive of this approach.

- **Will OWMC become more involved in waste reduction and recycling?**

  The Corporation does not expect to establish recycling facilities of its own, but will actively encourage research and development of waste reduction and recycling technologies.

- **What are the benefits that the establishment of an OWMC facility might bring to the community?**

  OWMC is presently conducting a benefit-impact study and some preliminary information is now available. A centralized facility would employ approximately 150 people and because many of these jobs would be of a highly skilled, technical nature, the Corporation will examine the possibility of training local people to assume these positions. Certainly, there will be some spinoff benefits from the facility's operations, through the purchase of locally supplied goods and services, and increased opportunities for employment and tax revenue.

Transportation of Wastes

The costs and risks associated with the transport of liquid industrial and hazardous waste were topics for discussion at many public meetings. Community residents were concerned primarily with safeguards from the hazards associated with the transport of toxic materials. Questions were also asked on the role transportation costs would play in ensuring all hazardous wastes receive adequate treatment.

- **Will OWMC subsidize the costs of transporting wastes to OWMC facilities? This would facilitate regulation and data collection and eliminate the temptation towards illegal dumping.**

  Industry representatives continue to recommend that OWMC charge true, unsubsidized charges for waste treatment and transport and at present this is our intention. As much as 60% of liquid industrial hazardous waste can be water and OWMC is investigating the possibilities of establishing dewatering facilities with the local transfer stations. Transfer stations would also bulk the various waste streams, thereby reducing the high costs of transporting small volumes of waste.

- **What type of transportation will OWMC use? Has rail transport been considered? How many trucks per day would enter a centralized facility? Would OWMC own and operate its own transport system?**

  Decisions on the type of transportation system OWMC will utilize cannot be made at this stage, although it seems unlikely that rail transport will be a large component of the Corporation's transportation planning.

The Corporation is engaged in a continuing dialogue with representatives of the Ontario Truckers' Association and the Liquid Waste Haulers' Association concerning all aspects of hazardous liquid waste transport.

OWMC has no intention of establishing its own transportation company as long as private sector operators provide safe, adequate services. It is difficult to estimate how many trucks would enter a centralized facility as volume estimates of wastes are still being refined. Additionally, 60% of many waste streams are water and if wastes are dewatered at transfer stations, volumes will be substantially reduced.

Consultation Opportunities

The Corporation's public consultation program was a topic of great interest and inquiries were very specific as to how OWMC plans to provide consultation opportunities for the various groups and individuals who wish to participate in both the site selection process, and decisions on the design of treatment and disposal facilities. The questions covered topics ranging from the methods OWMC would use to consult with members of the public to the types of groups and individuals OWMC would be seeking opinions from, to the geographical boundaries of the consultation program.

- **How will the general public be involved in the day-to-day operations of the OWMC facility? For example, will the public have any influence on the setting of emission standards?**

  The Corporation is committed to continuing public consultation, but the actual details of how the public will be involved in setting and monitoring emission standards have not yet been worked out. The creation of a citizens' liaison group is a distinct possibility.

- **Will OWMC's present policy of broad public consultation continue, and as issues under discussion become more technical, will there be funding available to participants?**

  Yes, the Corporation will continue to consult the public throughout each stage of the Facilities Development Process, right through to the monitoring of facility operations. The Corporation will fund Hearing participants, but the decisions on allocation will be made by the independent Hearing Panel. The Panel will decide what types of activities will be funded and which groups or individuals will be eligible to receive financial assistance.

APPENDIX G

OMMC Brief
to
Ministry of the Environment
on the
Blueprint for Waste Management

In this early stage of evolution of OMMC it is difficult to make specific comments on regulations relating to liquid toxic wastes and the proposed Blueprint, or to predict the ways in which they will affect OMMC policies and the eventual operation of our treatment facilities. Comments on these matters will be an important feature of our continuing discussions with the Ministry.

Nevertheless, even at this early stage, OMMC believes that it must express its views on a number of important issues as the MOE Blueprint proposals take form and develop. And we will wish to comment further as our activities become more focused and we approach our operational phase, and as the Hearings and Approvals procedures that will be a feature of the Blueprint are spelled out in detail.

Our first and most important point is that future regulations and their enforcement must ensure the movement of hazardous wastes to proper treatment facilities, either in the private sector or OMMC's. It should be acknowledged in the Blueprint that the development of regulations designed to provide fully for the management of hazardous wastes in Ontario cannot be accomplished before facilities are available in the province for the effective treatment of all major hazardous waste streams. At the moment, adequate facilities are not generally available in Ontario and their provision is the single most important responsibility of OMMC. In other words, regulations cannot be fully developed until the full range of treatment processes is available to support them.

Second, Ontario's special waste regulations must be designed in a way which is sensitive to Ontario's "environment" - in the widest sense of that word. While it is sensible for Ontario to take advantage of other jurisdictions' innovations in the regulation of special waste, OMMC suggests that Ontario should be cautious to avoid becoming locked into a framework which might not be appropriate to Ontario's particular circumstances. For example, Ontario would be wise to be very careful and selective in borrowing from the U.S. Environmental Protection Agency's hazardous waste program in view of the serious deficiencies in it which have recently been reported.

Third, whatever the regulations of the day, a convincing commitment to their vigorous and effective enforcement should be an integral part of the Blueprint. This will require well-resourced enforcement program which in the public's eye is lacking at the moment. Good regulations are valueless if they are not or cannot be properly enforced. Fourth, the definition of special wastes in the regulations must include all wastes that require special treatment not now available in traditional municipal landfills and sewage systems. The proposed approach suggests that some hazardous wastes in solid form may go directly to landfill under the "site specific waste" provision. OMMC's position is that special wastes should first be treated to the highest degree possible so that only treated residuals are deposited in landfill. In this way, the natural attenuation provided by a engineered landfill is used as a second line of defence rather than as the sole method of treatment. There should be wide consultation with the public and professional groups before final decisions on the categorization of wastes are made.

Fifth, OMMC supports the efforts reflected in the Blueprint to develop a more refined and comprehensive system for recording the generation of special wastes and tracking them to their final treatment and disposal. Special attention should be given to issues relating to the transportation of hazardous wastes.

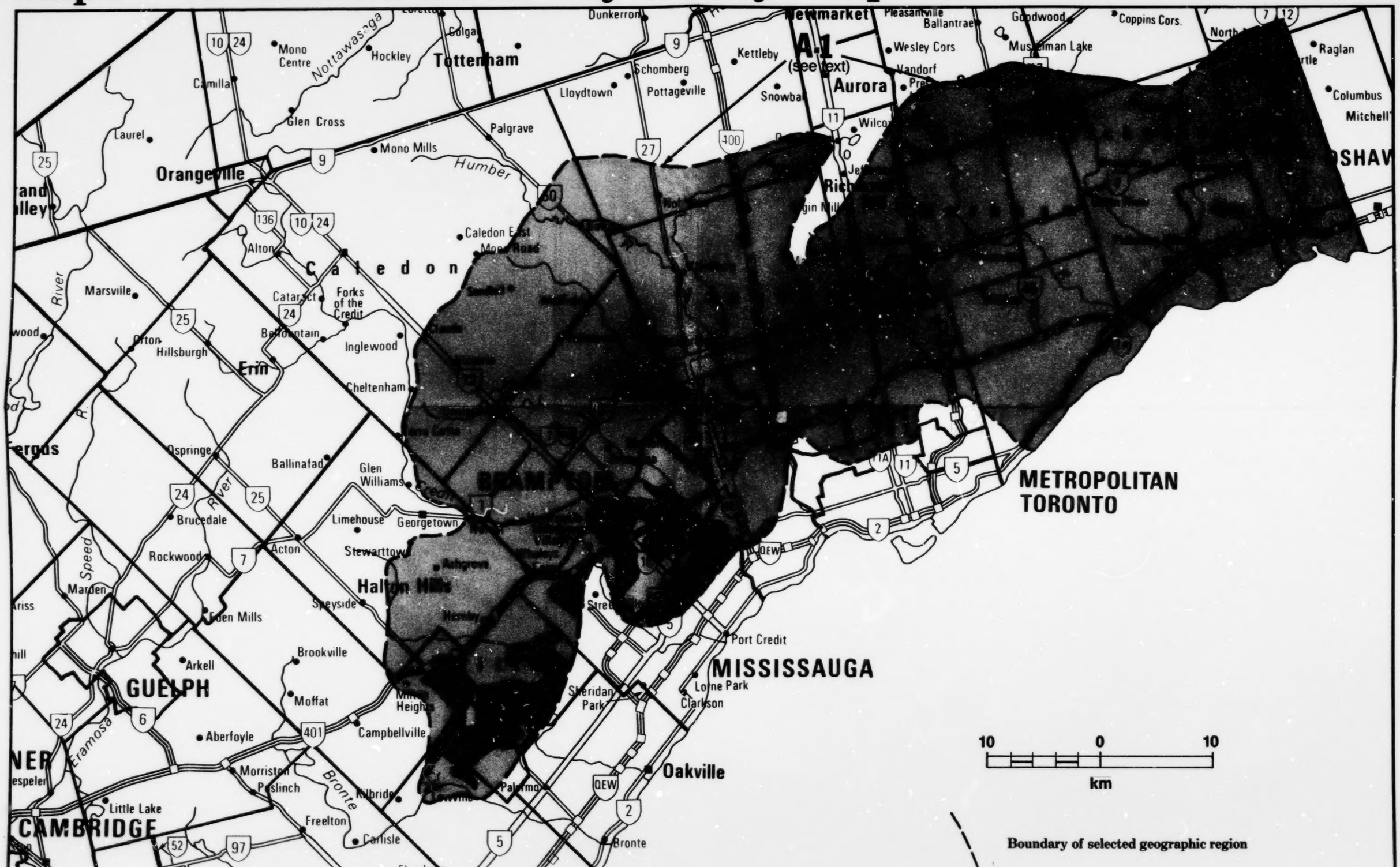
Sixth, regulatory changes reflected in the Blueprint should encourage waste reduction, recovery, recycling and exchange. This should include provisions for incentives for these activities and the identification and alleviation of legislative and regulatory disincentives.

Finally, the development of new regulations for special wastes such as those proposed in the Blueprint is an evolutionary process that ultimately will depend on many factors, one of the most important of which will be the commissioning and operation of OMMC's facilities. Even at this early stage the Blueprint should acknowledge this and indicate areas of further regulatory change that will take place when OMMC can offer additional disposal options not now available in Ontario.

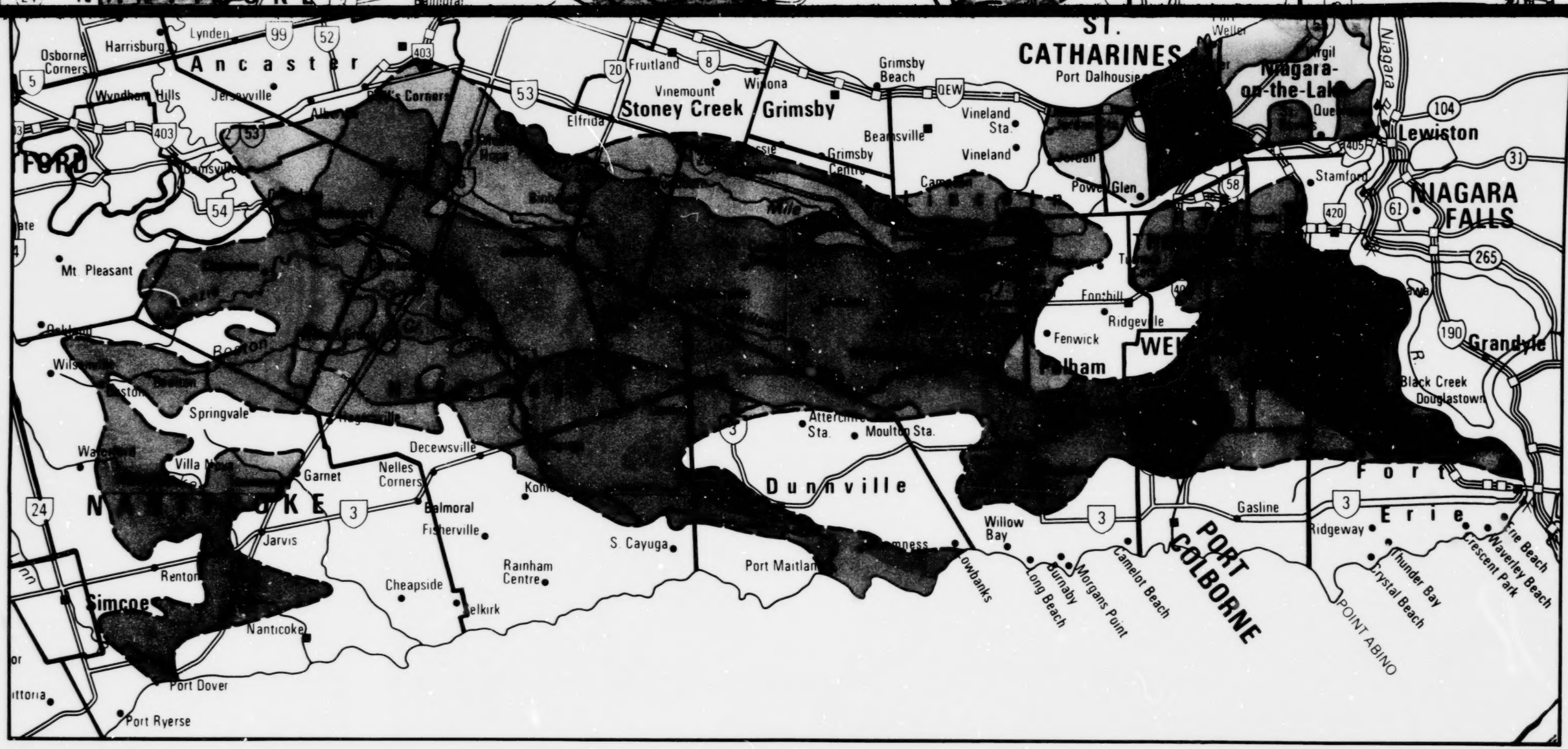
D. A. Chant
Chairman and President

May 3, 1983

Map 1 Areas excluded for any facility component



Flamboro
Limehouse
Georgetown
Norval
Brucedale
Rockwood
Acton
Stewarttown
Ashgrove
Speed
Marden
Halton Hills
Speyside
Hornby
Eden Mills
Brookville
Arkell
GUELPH
Moffat
Aberfoyle
Campbellville
Morriston
Puslinch
Bronte
Kilbride
Freelton
Little Lake
CAMBRIDGE
Carlisle
Galt
Flamboro Centre
Westover
Millgrove
Waterdown
Sheffield
Rockton
Clappisons Corners
Peters Corners
Greensville
Dundas
Aldershot
HAMILTON
Glen Morris
St. George
Troy
West Flamborough
Copetown
Lynden
Harrisburg
Osborne Corners
Ancaster
Wyndham Hills
Jerseyville
FORD
Fruitland
Vinemount
Stoney Creek
Elfrida
Winona
Grimsby
Grimsby Beach
Grimsby Centre
Beamsville
Vineland Sta.
Vineland
Mt. Pleasant
Springvale
Decewsville
Garnet
Nelles Corners
Attercliffe Sta.
Moulton Sta.
ST. CATHARINES
Port Dalhousie
Port Weller
Niagara-on-the-Lake
Youngstown
Lewiston
Stamford
Power Glen
NIAGARA FALLS
Fonthill
Ridgeville
Fenwick
Black Creek
Douglastown
Grandyle
Niagara R.
TORONTO
Port Credit
MISSISSAUGA
Lorne Park
Clarkson
Sheridan Park
Oakville
Palermo
Bronte
BURLINGTON
Streetsville
QEW
Speyside
Hornby
Milton Heights
10
0
10
km
Boundary of selected geographic region



Legend

Primary excluding factors

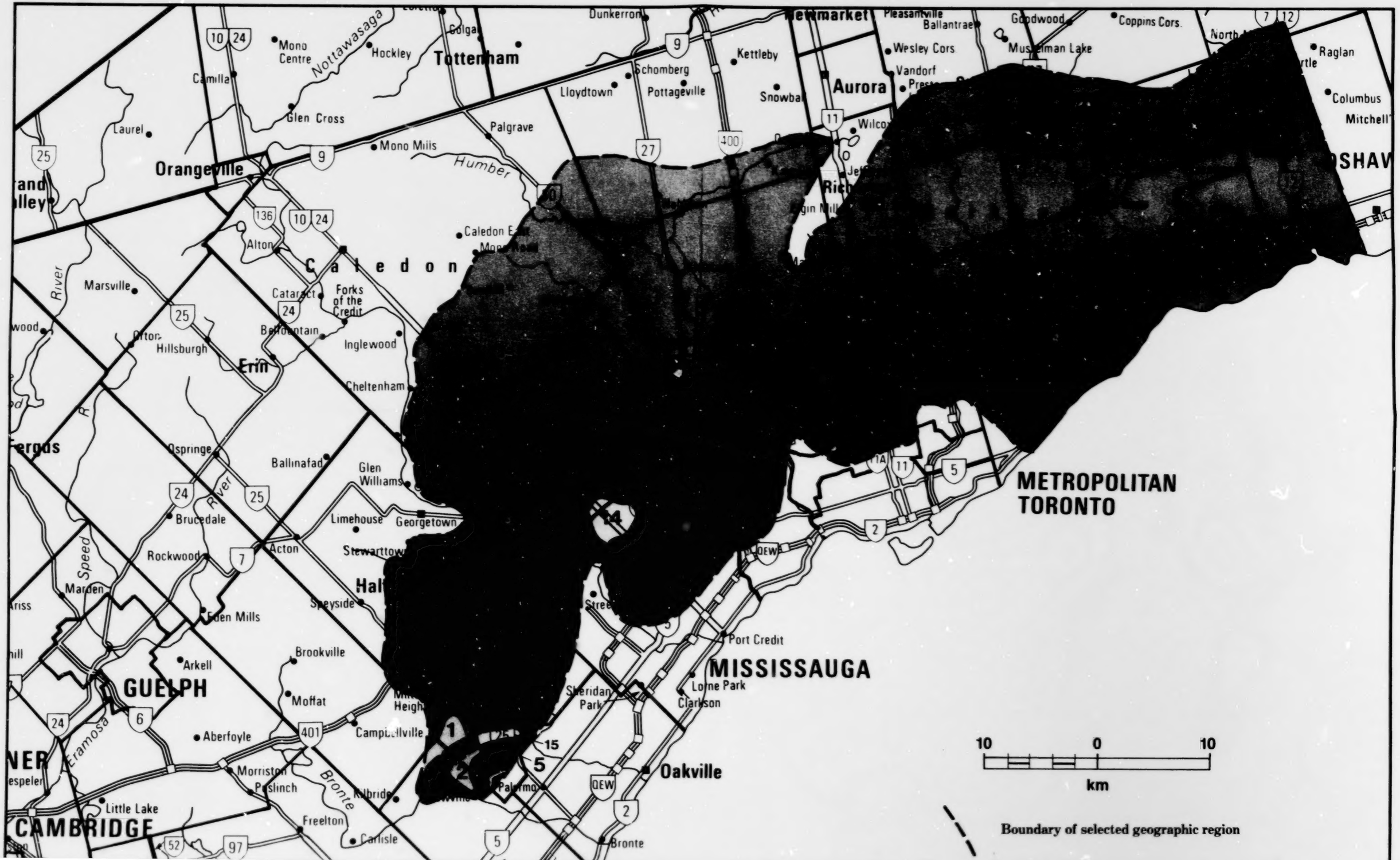
- Hydrogeological conditions (A Areas)
- Specialty agriculture and atmospheric dispersion
- Atmospheric dispersion only

(B Areas)

- Transportation considerations (More than 30 minutes from 400-series highways) (C Area)
- Major built up areas (D Areas)

Source: Ontario Waste Management Corporation

Map 2 Candidate areas



METROPOLITAN TORONTO
MISSISSAUGA
Port Credit
Lorne Park
Clarkson
Oakville
Bronte
BURLINGTON
HAMILTON
Dundas
Ancaster
Stoney Creek
Grimsby
ST. CATHARINES
Port Dalhousie
Youngstown
Lewiston
NIAGARA FALLS
Grandyle
GUELPH
CAMBRIDGE
FORD
Brookville
Arkell
Moffat
Aberfoyle
Campbellville
Morriston
Puslinch
Little Lake
Freelton
Carlisle
Flamboro Centre
Millgrove
Waterdown
Westover
Rockton
Clappisons Cors
Peters Cors
Greensville
Glen Morris
St George
Troy
Lynden
Harrisburg
Copetown
Osborne Corners
Wyndham Hills
Jerseyville
Brucedale
Limehouse
Georgetown
Stewarttown
Rockwood
Acton
Speyside
Eden Mills
Marden
Ballinafad
Ospringe
Glen Williams
Fruitland
Vinemount
Winona
Elfrida
Grimsby Beach
Grimsby Centre
Beamsville
Vineland Sta
Vineland
Caistor Centre
Caistorville
Winslow
Bismarck
Fonthill
Ridgeville
Fenwick
Wellandport
Welland
Empire
Blackheath
Ohswekeh
Mt Pleasant
Cedar Springs
Caledonia
Middleport
Cayuga
Stamford
Port Weller
Sheridan Park
Palermo
Milton Heights
Speed River
Eramosa River
Bronte Cr.
Welland R.
Black Creek
Niagara R.
QEW
401
403
405
420
Boundary of selected geographic region
10 0 10
km

Legend

Components included

- Physical/chemical only **1-2**
- Landfill and physical/chemical **3**
- Physical/chemical and incinerator **4-13**
- All components **14-19**

Source: Ontario Waste Management Corporation

Table 4

CANDIDATE AREAS — CHARACTERISTICS

CANDIDATE AREA	APPROXIMATE LOCATION	POSSIBLE FACILITY COMPONENTS			ENVIRONMENTAL PROTECTION						LAND USE								SITE
		ENGINEERED LANDFILL	INCINERATOR	PHYSICAL/ CHEMICAL PLANT	GEOLOGY/ HYDROGEOLOGY		ATMOSPHERIC DISPERSION	SURFACE WATERS	TRANSPORTATION		AGRICULTURE				PROXIMITY TO TO URBAN BUILT-UP AREAS (KM)	RURAL POPULATION DENSITY (PERSONS/SQ. KM)	PUBLICLY OWNED LAND	INDUSTRIALLY DESIGNATED LAND	
					DEPTH OF SILT/CLAY SOILS (METERS)	COMPLEXITY OF SOILS	TOPOGRAPHIC INFLUENCE	DISTANCE FROM CATEGORY 1 (KM)	TRAVEL TIME (MINUTES) FROM CENTROID	TRAVEL TIME (MINUTES) FROM 400-SERIES HIGHWAYS	SOIL CAPABILITY CLI CLASSES	SPECIALTY AGRICULTURE	% TWP IN FARMING	CAPITAL VALUE PER ACRE ($)	ANNUAL SALES PER IMPROVED ACRE ($)				
PHYSICAL/CHEMICAL ONLY																			
1	TOWN OF MILTON CITY OF BURLINGTON	NO	NO	YES	10-20	UNIFORM	YES	15-20	<15	<10	PREDOMINANTLY CLASS 1 SMALL AREAS OF CLASSES 2,3,4	LIMITED	60-79 (MILTON) 40-59 (BURLINGTON)	3-5999 (MILTON) 6-8999 (BURLINGTON)	6-899 (MILTON) 3-599 (BURLINGTON)	<1 (MILTON)	20-40	NONE	NONE	• SEWAGE TRE • PIPELINE ALI DISCHARGE • AGRICULTUR • ATMOSPHER • PLANNED AN
2	TOWN OF MILTON CITY OF BURLINGTON	NO	NO	YES	10-20	UNIFORM	YES	>15	<15	<20	CLASS 1	LIMITED	60-79 (MILTON) 40-59 (BURLINGTON)	3-5999 (MILTON) 6-8999 (BURLINGTON)	6-899 (MILTON) 3-599 (BURLINGTON)	>3½ (MILTON)	20-40	CENTRAL PORTION OF CANDIDATE AREA	NONE	• SEWAGE TRE • PIPELINE ALI DISCHARGE • AGRICULTUR • ATMOSPHER • PLANNED AN
LANDFILL AND PHYSICAL/CHEMICAL																			
3	TOWN OF MILTON CITY OF BURLINGTON	YES	NO	YES	20-30	UNIFORM	YES	15-20	<15	<10	PREDOMINANTLY CLASS 1 SOME CLASS 4	LIMITED	60-79 (MILTON) 40-59 (BURLINGTON)	3-5999 (MILTON) 6-8999 (BURLINGTON)	6-899 (MILTON) 3-599 (BURLINGTON)	>2 (MILTON)	20-40	IMMEDIATELY ADJACENT	NONE	• AGRICULTUR • PLANNED AN • PUBLIC LAN • ATMOSPHER
INCINERATOR AND PHYSICAL/CHEMICAL																			
4	CITY OF MISSISSAUGA	NO	YES	YES	PREDOMI-NANTLY 10-20	LOCALLY INTERMIXED	NO	10-15	15-45	<10	CLASS 1	LIMITED	<40	>9000	3-599	<1 (MISSISSAUGA)	0-19	NONE	YES (¼ OF CANDIDATE AREA)	• ATMOSPHER • PLANNED AN LAND USES • INDUSTRIAL
5	TOWN OF MILTON	NO	YES	YES	PREDOMI-NANTLY 10-20	UNIFORM	NO	10-20	<15-30	<10-20	PREDOMINANTLY CLASS 1 SOME CLASS 2	CONCEN-TRATED (EASTERN PORTION)	60-79	3-5999	6-899	<2 (MISSISSAUGA) <1 (MILTON)	20-40	YES (½ OF CANDIDATE AREA)	NONE	• ATMOSPHER • PLANNED AN • PUBLICLY O • AGRICULTUR
6	TOWN OF ANCASTER TOWNSHIP OF GLANBROOK	NO	YES	YES	10-20	LOCALLY INTERMIXED	NO	20-25	30-45	<10-20	PREDOMINANTLY CLASS 1 SOME CLASS 2	SCATTERED	60-79	3-5999 (ANCASTER) <3000 (GLANBROOK)	3-599	<5 (HAMILTON)	PRE-DOMINANTLY 20-40 40+ (GLANBROOK)	NONE	YES (NORTHWEST PORTION OF CANDIDATE AREA)	• ATMOSPHER • AGRICULTUR • INDUSTRIAL
7	TUSCARORA/SIX NATIONS INDIAN RESERVE No 40 NEW CREDIT INDIAN RESERVE No. 40A TOWN OF HALDIMAND CITY OF NANTICOKE TOWNSHIP OF BRANTFORD TOWNSHIP OF ONONDAGA	NO	YES	YES	10-20	LOCALLY INTERMIXED	NO	20-40	45-75	10-30	CLASS 1 & CLASS 2	LIMITED	<40 (INDIAN RESERVES) 60-79 (BRANTFORD) >80 (HALDIMAND, NANTICOKE, ONONDAGA)	PREDOMI-NANTLY <3000 3-5999 (BRANTFORD)	PREDOMI-NANTLY <300 3-599 (NANTICOKE) 6-899 (BRANTFORD)	<4 (BRANTFORD)	PRE-DOMINANTLY 20-40 0-19 (ONONDAGA)	NONE	YES (NORTHEAST PORTION OF CANDIDATE AREA)	• AGRICULTU • REGIONAL A • INDUSTRIAL
8	TOWN OF HALDIMAND TOWN OF DUNNVILLE TOWNSHIP OF WEST LINCOLN TOWNSHIP OF GLANBROOK	NO	YES	YES	PREDOMI-NANTLY 10-20 PORTION 20-30	LOCALLY INTERMIXED LOCALLY INTERMIXED	NO	15-30	30-75	10-30	PREDOMINANTLY CLASS 2 SOME CLASS 1	SCATTERED	PREDOMI-NANTLY >80 SOME 60-79	<3000	PREDOMI-NANTLY 3-599 <300 (HALDIMAND)	>9 (STONEY CREEK)	PRE-DOMINANTLY 20-40 40+ (GLANBROOK)	NONE	NONE	• AGRICULTU • REGIONAL A • ATMOSPHE
9	TOWNSHIP OF GLANBROOK TOWNSHIP OF WEST LINCOLN TOWN OF LINCOLN TOWN OF PELHAM	NO	YES	YES	10-20	UNIFORM	NO	10-20	30-60	<10-20	CLASS 1 & CLASS 2	CONCEN-TRATED (NORTH-EASTERN PORTION)	PREDOMI-NANTLY >80 60-79 (WESTERN PORTION) SOME 40-59	PREDOMI-NANTLY <3000 3-5999 (PELHAM) 6-8999 (LINCOLN & WEST LINCOLN)	PREDOMI-NANTLY 3-599 900+ (WEST LINCOLN & LINCOLN) 6-899 (PELHAM)	<4 (STONEY CREEK <1 (SMITHVILLE)	PRE-DOMINANTLY 20-40 SOME 40+ (GLANBROOK & LINCOLN)	NONE	NONE	• AGRICULTU • ATMOSPHE
10	TOWN OF STONEY CREEK TOWN OF LINCOLN TOWNSHIP OF WEST LINCOLN	NO	YES	YES	10-20	UNIFORM	NO	10-15	30-60	<10-20	PREDOMINANTLY CLASS 2 SMALL AREAS OF CLASSES 1 & 4	SCATTERED	PREDOMI-NANTLY 40-59 SOME 60-79	PREDOMI-NANTLY 6-8999 3-5999 (STONEY CREEK)	PREDOMI-NANTLY 900+ 6-899 (STONEY CREEK) 3-599 (WEST LINCOLN)	<4 (STONEY CREEK) <5 (GRIMSBY) +1 (SMITHVILLE) <4 (BEAMSVILLE)	0-15 (STONEY CREEK) 20-40 (WEST LINCOLN) 40+ (LINCOLN)	NONE	NONE	• AGRICULTU • ATMOSPHE
11	TOWNSHIP OF WAINFLEET	NO	YES	YES	10-20	UNIFORM	NO	5-15	>75	10-30	PREDOMINANTLY CLASS 1 SOME CLASS 3	SCATTERED	60-79	<3000	3-599	>4 (PORT COLBORNE) >5 (WELLAND)	20-40	NONE	NONE	• AGRICULTU • PIPELINE AI DISCHARGE • REGIONAL
12	TOWNSHIP OF WAINFLEET CITY OF PORT COLBORNE CITY OF WELLAND	NO	YES	YES	10-20	UNIFORM	NO	5-10	>75	<20	PREDOMINANTLY CLASS 3 SMALL AREA CLASS 2	LIMITED	PREDOMI-NANTLY 40-59 SOME 60-79	<3000	<300 (PORT COLBORNE) 3-599 (WAINFLEET)	+2 (PORT COLBORNE) +2 (WELLAND)	20-40	NONE	APPEARS IMMEDIATELY ADJACENT	• AGRICULTU • ATMOSPHE • REGIONAL • INDUSTRIA

Table 4

CANDIDATE AREAS — CHARACTERISTICS

APPROXIMATE LOCATION	POSSIBLE FACILITY COMPONENTS			ENVIRONMENTAL PROTECTION						LAND USE								SITE-IDENTIFICATION PRIORITIES
				GEOLOGY/ HYDROGEOLOGY		ATMOSPHERIC DISPERSION	SURFACE WATERS	TRANSPORTATION		AGRICULTURE					PROXIMITY TO TO URBAN BUILT-UP AREAS (KM)	RURAL POPULATION DENSITY (PERSONS/SQ. KM)	PUBLICLY OWNED LAND	INDUSTRIALLY DESIGNATED LAND	
	ENGINEERED LANDFILL	INCINERATOR	PHYSICAL/ CHEMICAL PLANT	DEPTH OF SILT/CLAY SOILS (METERS)	COMPLEXITY OF SOILS	TOPOGRAPHIC INFLUENCE	DISTANCE FROM CATEGORY 1 (KM)	TRAVEL TIME (MINUTES) FROM CENTROID	TRAVEL TIME (MINUTES) FROM 400-SERIES HIGHWAYS	SOIL CAPABILITY CLI CLASSES	SPECIALTY AGRICULTURE	% TWP IN FARMING	CAPITAL VALUE PER ACRE ($)	ANNUAL SALES PER IMPROVED ACRE ($)					
PHYSICAL/CHEMICAL ONLY																			
WN OF MILTON TY OF BURLINGTON	NO	NO	YES	10-20	UNIFORM	YES	15-20	<15	<10	PREDOMINANTLY CLASS 1 SMALL AREAS OF CLASSES 2,3,4	LIMITED	60-79 (MILTON) 40-59 (BURLINGTON)	3-5999 (MILTON) 6-8999 (BURLINGTON)	6-899 (MILTON) 3-599 (BURLINGTON)	<1 (MILTON)	20-40	NONE	NONE	• SEWAGE TREATMENT FACILITIES • PIPELINE ALIGNMENTS AND DISCHARGE SUITABILITY • AGRICULTURE • ATMOSPHERIC DISPERSION • PLANNED AND PROPOSED LAND USES
WN OF MILTON TY OF BURLINGTON	NO	NO	YES	10-20	UNIFORM	YES	·15	<15	<20	CLASS 1	LIMITED	60-79 (MILTON) 40-59 (BURLINGTON)	3-5999 (MILTON) 6-8999 (BURLINGTON)	6-899 (MILTON) 3-599 (BURLINGTON)	·3½ (MILTON)	20-40	CENTRAL PORTION OF CANDIDATE AREA	NONE	• SEWAGE TREATMENT FACILITIES • PIPELINE ALIGNMENTS AND DISCHARGE SUITABILITY • AGRICULTURE • ATMOSPHERIC DISPERSION • PLANNED AND PROPOSED LAND USES
LANDFILL AND PHYSICAL/CHEMICAL																			
WN OF MILTON TY OF BURLINGTON	YES	NO	YES	20-30	UNIFORM	YES	15-20	<15	<10	PREDOMINANTLY CLASS 1 SOME CLASS 4	LIMITED	60-79 (MILTON) 40-59 (BURLINGTON)	3-5999 (MILTON) 6-8999 (BURLINGTON)	6-899 (MILTON) 3-599 (BURLINGTON)	·2 (MILTON)	20-40	IMMEDIATELY ADJACENT	NONE	• AGRICULTURE • PLANNED AND PROPOSED LAND USES • PUBLIC LANDS • ATMOSPHERIC DISPERSION
INCINERATOR AND PHYSICAL/CHEMICAL																			
TY OF MISSISSAUGA	NO	YES	YES	PREDOMI-NANTLY 10-20	LOCALLY INTERMIXED	NO	10-15	15-45	<10	CLASS 1	LIMITED	<40	>9000	3-599	<1 (MISSISSAUGA)	0-19	NONE	YES (¼ OF CANDIDATE AREA)	• ATMOSPHERIC DISPERSION • PLANNED AND PROPOSED LAND USES • INDUSTRIALLY DESIGNATED LANDS
WN OF MILTON	NO	YES	YES	PREDOMI-NANTLY 10-20	UNIFORM	NO	10-20	<15-30	<10-20	PREDOMINANTLY CLASS 1 SOME CLASS 2	CONCEN-TRATED (EASTERN PORTION)	60-79	3-5999	6-899	<2 (MISSISSAUGA) <1 (MILTON)	20-40	YES (½ OF CANDIDATE AREA)	NONE	• ATMOSPHERIC DISPERSION • PLANNED AND PROPOSED LAND USES • PUBLICLY OWNED LANDS • AGRICULTURE
WN OF ANCASTER WNSHIP OF GLANBROOK	NO	YES	YES	10-20	LOCALLY INTERMIXED	NO	20-25	30-45	<10-20	PREDOMINANTLY CLASS 1 SOME CLASS 2	SCATTERED	60-79	3-5999 (ANCASTER) <3000 (GLANBROOK)	3-599	<5 (HAMILTON)	PRE-DOMINANTLY 20-40 40 - (GLANBROOK)	NONE	YES (NORTHWEST PORTION OF CANDIDATE AREA)	• ATMOSPHERIC DISPERSION • AGRICULTURE • INDUSTRIALLY DESIGNATED LANDS
SCARORA/SIX NATIONS INDIAN SERVE No 40 W CREDIT INDIAN RESERVE No 40A WN OF HALDIMAND Y OF NANTICOKE WNSHIP OF BRANTFORD WNSHIP OF ONONDAGA	NO	YES	YES	10-20	LOCALLY INTERMIXED	NO	20-40	45-75	10-30	CLASS 1 & CLASS 2	LIMITED	<40 (INDIAN RESERVES) 60-79 (BRANTFORD) >80 (HALDIMAND, NANTICOKE, ONONDAGA)	PREDOMI-NANTLY <3000 3-5999 (BRANTFORD)	PREDOMI-NANTLY <300 3-599 (NANTICOKE) 6-899 (BRANTFORD)	<4 (BRANTFORD)	PRE-DOMINANTLY 20-40 0-19 (ONONDAGA)	NONE	YES (NORTHEAST PORTION OF CANDIDATE AREA)	• AGRICULTURE • REGIONAL ACCESS • INDUSTRIALLY DESIGNATED LANDS
WN OF HALDIMAND WN OF DUNNVILLE WNSHIP OF WEST LINCOLN WNSHIP OF GLANBROOK	NO	YES	YES	PREDOMI-NANTLY 10-20 PORTION 20-30	LOCALLY INTERMIXED LOCALLY INTERMIXED	NO	15-30	30-75	10-30	PREDOMINANTLY CLASS 2 SOME CLASS 1	SCATTERED	PREDOMI-NANTLY >80 SOME 60-79	<3000	PREDOMI-NANTLY 3-599 <300 (HALDIMAND)	>9 (STONEY CREEK)	PRE-DOMINANTLY 20-40 40 - (GLANBROOK)	NONE	NONE	• AGRICULTURE • REGIONAL ACCESS • ATMOSPHERIC DISPERSION
WNSHIP OF GLANBROOK WNSHIP OF WEST LINCOLN WN OF LINCOLN WN OF PELHAM	NO	YES	YES	10-20	UNIFORM	NO	10-20	30-60	<10-20	CLASS 1 & CLASS 2	CONCEN-TRATED (NORTH-EASTERN PORTION)	PREDOMI-NANTLY >80 (0-79 (WESTERN PORTION) SOME 40-59	PREDOMI-NANTLY <3000 3-5999 (PELHAM) 6-8999 (LINCOLN & WEST LINCOLN)	PREDOMI-NANTLY 3-599 900 - (WEST LINCOLN & LINCOLN) 6-899 (PELHAM)	<4 (STONEY CREEK <1 (SMITHVILLE)	PRE-DOMINANTLY 20-40 SOME 40 - (GLANBROOK & LINCOLN)	NONE	NONE	• AGRICULTURE • ATMOSPHERIC DISPERSION
WN OF STONEY CREEK WN OF LINCOLN WNSHIP OF WEST LINCOLN	NO	YES	YES	10-20	UNIFORM	NO	10-15	30-60	<10-20	PREDOMINANTLY CLASS 2 SMALL AREAS OF CLASSES 1 & 4	SCATTERED	PREDOMI-NANTLY 40-59 SOME 60-79	PREDOMI-NANTLY 6-8999 3-5999 (STONEY CREEK)	PREDOMI-NANTLY 900 - 6-899 (STONEY CREEK) 3-599 (WEST LINCOLN)	<4 (STONEY CREEK) <5 (GRIMSBY) ·1 (SMITHVILLE) <4 (BEAMSVILLE)	0-19 (STONEY CREEK) 20-40 (WEST LINCOLN) 40 - (LINCOLN)	NONE	NONE	• AGRICULTURE • ATMOSPHERIC DISPERSION
WNSHIP OF WAINFLEET	NO	YES	YES	10-20	UNIFORM	NO	5-15	>75	10-30	PREDOMINANTLY CLASS 1 SOME CLASS 3	SCATTERED	60-79	<3000	3-599	>4 (PORT COLBORNE) >5 (WELLAND)	20-40	NONE	NONE	• AGRICULTURE • PIPELINE ALIGNMENTS AND DISCHARGE SUITABILITY • REGIONAL ACCESS
WNSHIP OF WAINFLEET TY OF PORT COLBORNE TY OF WELLAND	NO	YES	YES	10-20	UNIFORM	NO	5-10	>75	<20	PREDOMINANTLY CLASS 3 SMALL AREA CLASS 2	LIMITED	PREDOMI-NANTLY 40-59 SOME 60-79	<3000	<300 (PORT COLBORNE) 3-599 (WAINFLEET)	·2 (PORT COLBORNE) ·2 (WELLAND)	20-40	NONE	APPEARS IMMEDIATELY ADJACENT	• AGRICULTURE • ATMOSPHERIC DISPERSION • REGIONAL ACCESS • INDUSTRIALLY DESIGNATED LANDS
F THOROLD F NIAGARA FALLS	NO	YES	YES	10-20	UNIFORM	NO	5-10	60-75	<10	PREDOMINANTLY CLASS 3	LIMITED	<40	PREDOMI-NANTLY	PREDOMI-NANTLY	<1 (NIAGARA	0-19 (NIAGARA	NONE	YES (NORTH AND	• ATMOSPHERIC DISPERSION • INDUSTRIALLY DESIGNATED LANDS • AREAS NOT IN HORTICULTURE USE

	TOWN OF HALDIMAND CITY OF NANTICOKE TOWNSHIP OF BRANTFORD TOWNSHIP OF ONONDAGA												60-79 (BRANTFORD) >80 (HALDIMAND, NANTICOKE ONONDAGA)	3-5999 (BRANTFORD)	3-599 (NANTICOKE) 6-899 (BRANTFORD)		0-19 (ONONDAGA)		CANDIDATE AREA)	• INDUSTRIALL
8	TOWN OF HALDIMAND TOWN OF DUNNVILLE TOWNSHIP OF WEST LINCOLN TOWNSHIP OF GLANBROOK	NO	YES	YES	PREDOMI-NANTLY 10-20 PORTION 20-30	LOCALLY INTERMIXED LOCALLY INTERMIXED	NO	15-30	30-75	10-30	PREDOMINANTLY CLASS 2 SOME CLASS 1	SCATTERED	PREDOMI-NANTLY >80 SOME 60-79	<3000	PREDOMI-NANTLY 3-599 <300 (HALDIMAND)	>9 (STONEY CREEK)	PRE-DOMINANTLY 20-40 40 - (GLANBROOK)	NONE	NONE	• AGRICULTURE • REGIONAL AC • ATMOSPHERIC
9	TOWNSHIP OF GLANBROOK TOWNSHIP OF WEST LINCOLN TOWN OF LINCOLN TOWN OF PELHAM	NO	YES	YES	10-20	UNIFORM	NO	10-20	30-60	<10-20	CLASS 1 & CLASS 2	CONCEN-TRATED (NORTH-EASTERN PORTION)	PREDOMI-NANTLY >80 60-79 (WESTERN PORTION) SOME 40-59	PREDOMI-NANTLY <3000 3-5999 (PELHAM) 6-8999 (LINCOLN & WEST LINCOLN)	PREDOMI-NANTLY 3-599 900 - (WEST LINCOLN & LINCOLN) 6-899 (PELHAM)	<4 (STONEY CREEK <1 (SMITHVILLE)	PRE-DOMINANTLY 20-40 SOME 40 - (GLANBROOK & LINCOLN)	NONE	NONE	• AGRICULTURE • ATMOSPHERIC
10	TOWN OF STONEY CREEK TOWN OF LINCOLN TOWNSHIP OF WEST LINCOLN	NO	YES	YES	10-20	UNIFORM	NO	10-15	30-60	<10-20	PREDOMINANTLY CLASS 2 SMALL AREAS OF CLASSES 1 & 4	SCATTERED	PREDOMI-NANTLY 40-59 SOME 60-79	PREDOMI-NANTLY 6-8999 3-5999 (STONEY CREEK)	PREDOMI-NANTLY 900 - 6-899 (STONEY CREEK) 3-599 (WEST LINCOLN)	<4 (STONEY CREEK) <5 (GRIMSBY) -1 (SMITHVILLE) <4 (BEAMSVILLE)	0-19 (STONEY CREEK) 20-40 (WEST LINCOLN) 40 - (LINCOLN)	NONE	NONE	• AGRICULTURE • ATMOSPHERIC
11	TOWNSHIP OF WAINFLEET	NO	YES	YES	10-20	UNIFORM	NO	5-15	>75	10-30	PREDOMINANTLY CLASS 1 SOME CLASS 3	SCATTERED	60-79	<3000	3-599	>4 (PORT COLBORNE) >5 (WELLAND)	20-40	NONE	NONE	• AGRICULTURE • PIPELINE ALIG DISCHARGE S • REGIONAL AC
12	TOWNSHIP OF WAINFLEET CITY OF PORT COLBORNE CITY OF WELLAND	NO	YES	YES	10-20	UNIFORM	NO	5-10	>75	<20	PREDOMINANTLY CLASS 3 SMALL AREA CLASS 2	LIMITED	PREDOMI-NANTLY 40-59 SOME 60-79	<3000	<300 (PORT COLBORNE) 3-599 (WAINFLEET)	-2 (PORT COLBORNE) -2 (WELLAND)	20-40	NONE	APPEARS IMMEDIATELY ADJACENT	• AGRICULTURE • ATMOSPHERIC • REGIONAL AC • INDUSTRIALL
13	CITY OF THOROLD CITY OF NIAGARA FALLS TOWN OF FORT ERIE	NO	YES	YES	10-20	UNIFORM	NO	5-10	60-75	<10	PREDOMINANTLY CLASS 3 SMALL AREAS OF CLASSES 2 & 7	LIMITED	<40	PREDOMI-NANTLY <3000 3-5999 (THOROLD)	PREDOMI-NANTLY <300 3-599 (THOROLD)	<1 (NIAGARA FALLS) <3 (FORT ERIE)	0-19 (NIAGARA FALLS) 40 - (FORT ERIE) 20-40 (THOROLD)	NONE	YES (NORTH AND SOUTH PORTIONS OF CANDIDATE AREA)	• ATMOSPHERIC • INDUSTRIALLY • AREAS NOT IN • PIPELINE ALIG DISCHARGE S

ALL COMPONENTS

14	CITY OF MISSISSAUGA CITY OF BRAMPTON	YES	YES	YES	20-30	LOCALLY INTERMIXED	NO	15-20	30-45	<10	CLASS 1	LIMITED	<40 (MISSISSAUGA) 40-59 (BRAMPTON)	>9000	3-599	<1 (BRAMPTON & MISSISSAUGA)	0-19 (MISSISSAUGA) 40 - (BRAMPTON)	NONE	ADJACENT	• PLANNED AND • ATMOSPHERIC • INDUSTRIALLY • SEWAGE TREA • PIPELINE ALIG DISCHARGE S
15	TOWN OF MILTON	YES	YES	YES	20-30	UNIFORM	NO	10-20	<15	<10-20	CLASS 1	LIMITED	60-79	3-5999	6-899	-2 (MILTON)	20-40	NONE	NONE	• ATMOSPHERIC • PLANNED AND • AGRICULTURE • SEWAGE TREA • PIPELINE ALIG DISCHARGE S
16	TOWNSHIP OF ONONDAGA SIX NATIONS INDIAN RESERVE No 40 TOWN OF ANCASTER TOWNSHIP OF GLANBROOK TOWN OF HALDIMAND	YES	YES	YES	20-30	LOCALLY INTERMIXED	NO	20-40	30-60	<10-20	PREDOMINANTLY CLASS 1 SOME CLASS 2	SCATTERED	60-79 (NORTHERN PORTION) >80 (CENTRAL PORTION) <40 (SOUTHERN PORTION)	PREDOMI-NANTLY <3000 3-5999 (ANCASTER)	PREDOMI-NANTLY <300 3-599 (ANCASTER & GLANBROOK)	<7 (HAMILTON)	PRE-DOMINANTLY 0-19 (ONONDAGA) 20-40 (ANCASTER & INDIAN RESERVE) 40 - (GLANBROOK)	NONE	NONE	• ATMOSPHERIC • AGRICULTURE
17	TOWN OF HALDIMAND TOWNSHIP OF GLANBROOK	YES	YES	YES	20-30	LOCALLY INTERMIXED	NO	20-30	45-60	10-30	PREDOMINANTLY CLASS 2 SMALL AREA OF CLASS 1	LIMITED	PREDOMI-NANTLY >80 SOME 60-79	<3000	PREDOMI-NANTLY <300 3-599 (GLANBROOK)	>9 (HAMILTON)	PRE-DOMINANTLY 20-40 40 - (GLANBROOK)	NONE	NONE	• AGRICULTURE • REGIONAL ACC
18	TOWNSHIP OF GLANBROOK TOWNSHIP OF WEST LINCOLN TOWNSHIP OF WAINFLEET TOWN OF PELHAM CITY OF WELLAND CITY OF PORT COLBORNE	YES	YES	YES	20-30 (WEST PORTION) >30 (EAST PORTION)	UNIFORM UNIFORM	NO	5-20	30->75	<10-30	PREDOMINANTLY CLASS 2 SOME AREAS OF CLASSES 1,3 & 4	CONCEN-TRATED (SOUTH EASTERN PORTION)	PRE-DOMINANTLY >80 60-79 (WESTERN & SOUTH-EASTERN PORTIONS 40-59 & <40 (EASTERN EDGE)	PREDOMI-NANTLY <3000 3-5999 (PELHAM)	PREDOMI-NANTLY 3-599 6-899 (PELHAM) <300 (PORT COLBORNE)	-2 PORT COLBORNE) <1 (WELLAND) -2 (SMITHVILLE)	PRE-DOMINANTLY 20-40 40 - (GLANBROOK)	NONE	YES (SOUTHEAST PORTION OF CANDIDATE AREA)	• AGRICULTURE • REGIONAL ACC • ATMOSPHERIC • INDUSTRIALLY
19	CITY OF WELLAND CITY OF NIAGARA FALLS	YES	YES	YES	20-30	UNIFORM	NO	5-10	60-75	<10	CLASS 2 & CLASS 3	LIMITED	<40	<3000	PRE-DOMINANTLY <300 3-599 (WELLAND)	-3 (NIAGARA FALLS) -5 (WELLAND)	0-19 (NIAGARA FALLS) 20-40 (WELLAND)	NONE	APPEARS IMMEDIATELY ADJACENT	• INDUSTRIALLY • ATMOSPHERIC • LANDS NOT IN • SEWAGE TREA

N CREDIT INDIAN RESERVE No 40A WN OF HALDIMAND Y OF NANTICOKE WNSHIP OF BRANTFORD WNSHIP OF ONONDAGA											RESERVES) 60-79 (BRANTFORD) >80 (HALDIMAND, NANTICOKE, ONONDAGA)	<3000 3-5999 (BRANTFORD)	3-599 (NANTICOKE) 6-899 (BRANTFORD)		20-40 0-19 (ONONDAGA)		PORTION OF CANDIDATE AREA)	• INDUSTRIALLY DESIGNATED LANDS
WN OF HALDIMAND WN OF DUNNVILLE WNSHIP OF WEST LINCOLN WNSHIP OF GLANBROOK	NO	YES	YES	PREDOMI-NANTLY 10-20 PORTION 20-30	LOCALLY INTERMIXED LOCALLY INTERMIXED	NO	15-30	30-75	10-30	PREDOMINANTLY CLASS 2 SOME CLASS 1	SCATTERED	PREDOMI-NANTLY >80 SOME 60-79	<3000	PREDOMI-NANTLY 3-599 <300 (HALDIMAND)	>9 (STONEY CREEK)	PRE-DOMINANTLY 20-40 40 - (GLANBROOK)	NONE	NONE	• AGRICULTURE • REGIONAL ACCESS • ATMOSPHERIC DISPERSION
WNSHIP OF GLANBROOK WNSHIP OF WEST LINCOLN WN OF LINCOLN WN OF PELHAM	NO	YES	YES	10-20	UNIFORM	NO	10-20	30-60	<10-20	CLASS 1 & CLASS 2	CONCEN-TRATED (NORTH-EASTERN PORTION)	PREDOMI-NANTLY >80 60-79 (WESTERN PORTION) SOME 40-59	PREDOMI-NANTLY <3000 3-5999 (PELHAM) 6-8999 (LINCOLN & WEST LINCOLN)	PREDOMI-NANTLY 3-599 900 - (WEST LINCOLN & LINCOLN) 6-899 (PELHAM)	<4 (STONEY CREEK <1 (SMITHVILLE)	PRE-DOMINANTLY 20-40 SOME 40 - (GLANBROOK & LINCOLN)	NONE	NONE	• AGRICULTURE • ATMOSPHERIC DISPERSION
WN OF STONEY CREEK WN OF LINCOLN WNSHIP OF WEST LINCOLN	NO	YES	YES	10-20	UNIFORM	NO	10-15	30-60	<10-20	PREDOMINANTLY CLASS 2 SMALL AREAS OF CLASSES 1 & 4	SCATTERED	PREDOMI-NANTLY 40-59 SOME 60-79	PREDOMI-NANTLY 6-8999 3-5999 (STONEY CREEK)	PREDOMI-NANTLY 900 - 6-899 (STONEY CREEK) 3-599 (WEST LINCOLN)	<4 (STONEY CREEK) <5 (GRIMSBY) -1 (SMITHVILLE) <4 (BEAMSVILLE)	0-19 (STONEY CREEK) 20-40 (WEST LINCOLN) 40 - (LINCOLN)	NONE	NONE	• AGRICULTURE • ATMOSPHERIC DISPERSION
WNSHIP OF WAINFLEET	NO	YES	YES	10-20	UNIFORM	NO	5-15	>75	10-30	PREDOMINANTLY CLASS 1 SOME CLASS 3	SCATTERED	60-79	<3000	3-599	>4 (PORT COLBORNE) >5 (WELLAND)	20-40	NONE	NONE	• AGRICULTURE • PIPELINE ALIGNMENTS AND DISCHARGE SUITABILITY • REGIONAL ACCESS
WNSHIP OF WAINFLEET Y OF PORT COLBORNE Y OF WELLAND	NO	YES	YES	10-20	UNIFORM	NO	5-10	>75	<20	PREDOMINANTLY CLASS 3 SMALL AREA CLASS 2	LIMITED	PREDOMI-NANTLY 40-59 SOME 60-79	<3000	<300 (PORT COLBORNE) 3-599 (WAINFLEET)	-2 (PORT COLBORNE) -2 (WELLAND)	20-40	NONE	APPEARS IMMEDIATELY ADJACENT	• AGRICULTURE • ATMOSPHERIC DISPERSION • REGIONAL ACCESS • INDUSTRIALLY DESIGNATED LANDS
Y OF THOROLD Y OF NIAGARA FALLS WN OF FORT ERIE	NO	YES	YES	10-20	UNIFORM	NO	5-10	60-75	<10	PREDOMINANTLY CLASS 3 SMALL AREAS OF CLASSES 2 & 7	LIMITED	<40	PREDOMI-NANTLY <3000 3-5999 (THOROLD)	PREDOMI-NANTLY <300 3-599 (THOROLD)	<1 (NIAGARA FALLS) <3 (FORT ERIE)	0-19 (NIAGARA FALLS) 40 - (FORT ERIE) 20-40 (THOROLD)	NONE	YES (NORTH AND SOUTH PORTIONS OF CANDIDATE AREA)	• ATMOSPHERIC DISPERSION • INDUSTRIALLY DESIGNATED LANDS • AREAS NOT IN AGRICULTURAL USE • PIPELINE ALIGNMENT AND DISCHARGE SUITABILITY

ALL COMPONENTS

Y OF MISSISSAUGA Y OF BRAMPTON	YES	YES	YES	20-30	LOCALLY INTERMIXED	NO	15-20	30-45	<10	CLASS 1	LIMITED	<40 (MISSISSAUGA) 40-59 (BRAMPTON)	>9000	3-599	<1 (BRAMPTON & MISSISSAUGA)	0-19 (MISSISSAUGA) 40 - (BRAMPTON)	NONE	ADJACENT	• PLANNED AND PROPOSED LAND USES • ATMOSPHERIC DISPERSION • INDUSTRIALLY DESIGNATED LANDS • SEWAGE TREATMENT FACILITIES • PIPELINE ALIGNMENT AND DISCHARGE SUITABILITY
WN OF MILTON	YES	YES	YES	20-30	UNIFORM	NO	10-20	<15	<10-20	CLASS 1	LIMITED	60-79	3-5999	6-899	-2 (MILTON)	20-40	NONE	NONE	• ATMOSPHERIC DISPERSION • PLANNED AND PROPOSED LAND USES • AGRICULTURE • SEWAGE TREATMENT FACILITIES • PIPELINE ALIGNMENT AND DISCHARGE SUITABILITY
WNSHIP OF ONONDAGA NATIONS INDIAN RESERVE No 40 WN OF ANCASTER WNSHIP OF GLANBROOK WN OF HALDIMAND	YES	YES	YES	20-30	LOCALLY INTERMIXED	NO	20-40	30-60	<10-20	PREDOMINANTLY CLASS 1 SOME CLASS 2	SCATTERED	60-79 (NORTHERN PORTION) >80 (CENTRAL PORTION) <40 (SOUTHERN PORTION)	PREDOMI-NANTLY <3000 3-5999 (ANCASTER)	PREDOMI-NANTLY <300 3-599 (ANCASTER & GLANBROOK)	<7 (HAMILTON)	PRE-DOMINANTLY 0-19 (ONONDAGA) 20-40 (ANCASTER & INDIAN RESERVE) 40 - (GLANBROOK)	NONE	NONE	• ATMOSPHERIC DISPERSION • AGRICULTURE
WN OF HALDIMAND WNSHIP OF GLANBROOK	YES	YES	YES	20-30	LOCALLY INTERMIXED	NO	20-30	45-60	10-30	PREDOMINANTLY CLASS 2 SMALL AREA OF CLASS 1	LIMITED	PREDOMI-NANTLY >80 SOME 60-79	<3000	PREDOMI-NANTLY <300 3-599 (GLANBROOK)	>9 (HAMILTON)	PRE-DOMINANTLY 20-40 40 - (GLANBROOK)	NONE	NONE	• AGRICULTURE • REGIONAL ACCESS
WNSHIP OF GLANBROOK WNSHIP OF WEST LINCOLN WNSHIP OF WAINFLEET WN OF PELHAM Y OF WELLAND Y OF PORT COLBORNE	YES	YES	YES	20-30 (WEST PORTION) >30 (EAST PORTION)	UNIFORM UNIFORM	NO	5-20	30->75	<10-30	PREDOMINANTLY CLASS 2 SOME AREAS OF CLASSES 1,3 & 4	CONCEN-TRATED (SOUTH EASTERN PORTION)	PRE-DOMINANTLY >80 60-79 (WESTERN & SOUTH-EASTERN PORTIONS 40-59 & <40 (EASTERN EDGE)	PREDOMI-NANTLY <3000 3-5999 (PELHAM)	PREDOMI-NANTLY 3-599 6-899 (PELHAM) <300 (PORT COLBORNE)	-2 PORT COLBORNE) <1 (WELLAND) -2 (SMITHVILLE)	PRE-DOMINANTLY 20-40 40 - (GLANBROOK)	NONE	YES (SOUTHEAST PORTION OF CANDIDATE AREA)	• AGRICULTURE • REGIONAL ACCESS • ATMOSPHERIC DISPERSION • INDUSTRIALLY DESIGNATED LANDS
Y OF WELLAND Y OF NIAGARA FALLS	YES	YES	YES	20-30	UNIFORM	NO	5-10	60-75	<10	CLASS 2 & CLASS 3	LIMITED	<40	<3000	PRE-DOMINANTLY <300 3-599 (WELLAND)	-3 (NIAGARA FALLS) -5 (WELLAND)	0-19 (NIAGARA FALLS) 20-40 (WELLAND)	NONE	APPEARS IMMEDIATELY ADJACENT	• INDUSTRIALLY DESIGNATED LANDS • ATMOSPHERIC DISPERSION • LANDS NOT IN AGRICULTURAL USE • SEWAGE TREATMENT FACILITIES

POOR

QUALITY

ORIGINAL